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D.P. Chattopadhyaya

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For subscription and all other business enquiries please contact:

CENTRE FOR STUDIES IN CIVILIZATIONS
Darshan Bhawan
36, Tughlakabad Institutional Area
New Delhi-110 062 India
Phone: 91-11-2605 6657, 2605 7541 Telefax: 91-11-2605 8735
E-mail: csc@del2.vsnl.net.in, dpc@cal.vsnl.net.in

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From the Editorial Desk

2005 is the birth centenary year of Jean Paul Sartre, arguably the best known philosopher and thinker of the twentieth century who exerted an over-arching influence on intellectual life with his prolific literary and philosophical output. The range of his genius was phenomenal. Today after a quarter century of his death in 1980 he remains the most discussed intellectual among the academia and the intelligentsia even in India. Sartre's refusal of the Nobel Prize in 1964 was an oblique assertion of his authentic self. He was a significant arbiter of intellectual life in post-war France for he addressed a wide range of seminal issues so basic to the complexities, potentialities and limits of human condition.

For those not schooled formally in the evolution of philosophical thought it is with Sartre that Existentialism is identified. He was not the first one to theorise on it. Existence for him is the will to project one's self into the future to create one's future. It was essentially a sense of personal responsibility and there were no compromises with an individual's freedom. The journey of Sartre's thought from the primacy of individual subjectivity to its anchoring in collective praxis is an expression of the ways in which he himself was related with and reflected upon the ongoing developments in various spheres of life in France.

The intensity of Sartre's thought and its influence on the academics and intelligentsia is too well-known to be reiterated. He was there in the curricula wherever western philosophy was taught in Indian Universities. Sartre's immense literary contribution influenced intellectuals in no uncertain terms. Works of fiction, and theatre in English, Hindi and regional languages with the theme of anger, individual dignity, social equality and justice had traces of Sartre. He enjoyed an enormous influence. His life, thought and actions show that any effort to seek emancipation from various forms of oppression, subjugation, slavery and injustice involves difficult and fundamental choices, which we find more convenient to evade than to face and confront.

D.P. CHATTOPADHYAYA
Editor

Sandhān, Vol. V, No. 1, January–June 2005

ARTICLES

Dhruv Raina

Multicultural and Postcolonial Theories of Science and Society

This essay attempts to elucidate the variety of issues arising from postcolonial and multicultural theories of science. As a theory of science, both multicultural and postcolonial theories have been the subject of recent concern among historians and philosophers of science, as well as sociologists of science [Harding, 1998; Hess, 1995; Goonatilake, 1998, Nader, 1996]. In this essay I shall argue that postcolonial theory, like multiculturalism, is a very diverse academic movement; and as a movement challenges the cognitive authority of Eurocentrism in social theory. Further, it is argued that in its present form postcolonial theory of science is yet very amorphous. While the multiplicity of strains within postcolonial theory provide fruitful opportunities and resources for studying science in colonial and postcolonial contexts, as a theory of science its horizon is limited. These limitations arise from its location within the problematic of knowledge-power.

While multiculturalism as a movement itself coruscates into a disciplinary movement during the period of decolonisation, it is suggested in the concluding section that a multicultural theory of science possibly opens up the field, and widens the horizon, for postcolonial theorising about science. This is important if there is concurrence that the objective of such projects is to develop theories of science that are global in extent, cognitively just [Viswanathan, 1999] and bound together by a principle of epistemological egalitarianism [Blue, 1999]. The attempt to bring cognitive justice or epistemological egalitarianism to bear upon questions of how scientific knowledge is conceptualised is indicative of the similarities with the political concerns of multiculturalism [Parekh, 2000]. While the political concerns of multiculturalism relate to issues of democratization and non-discrimination, these are articulated around the theoretical structures of identity and difference. These very structures impact on the demarcation of the boundaries of the scientific and the non-scientific and in discourses about scientific discourse that accord centrality to modern science as a Western cognitive enterprise.

A theory anchored in a multicultural conception of scientific knowledge would have to overcome the limitations and inadequacies of standard social theory and history. An endeavour of this order would assist in preventing the replication of the very features that postcolonial theory opposed and subsequently disengaged itself from. Such a theory would have to display a devout sensitivity to the nuances of particular cases, without losing sight or contact with larger systems [Fuller, 1999, pp. 412–3]. There exist philosophies of science that have addressed the situated character of diverse knowledge forms, and have combed the rewards of standpoint theory without lapsing into the particularities that the latter could entail [Longino, 1994; Longino, 2001]. In a manner of speaking this paper explores the terrain of postcolonial and multicultural theories of science. The label postcolonial theory of science immediately evokes the dialectic of science and power. While multicultural theory evokes a similar metaphor, it is pressured into engaging with the diversity of knowledge forms that are mandated as equal in the public sphere. The idea of the pluralism of the sciences is premised on the recognition of the presence of the severalty of knowledge or scientific forms. Nevertheless, it says little about the power relations that act to discriminate between them. Postcolonial theory unveils these relations, but a multicultural theory of science is immanently premised on the idea of epistemological egalitarianism. We now set out to explore postcolonial and multicultural theory with the above stated objective in mind.

DIVERSITY OF POSTCOLONIAL STANDPOINTS

The postcolonial situation permits the possibility of questioning the representation of non-Western knowledge in social science theory. Such a theory of science engages with science while situated within the historical discourse about science. The scientific object it engages with is that of science as practised in contradistinction to an idea of transcendent science. In other words, it programmatically employs the reflective method of philosophy in order to bring some reflexivity into science [Jamison, 1982, p.1]. Furthermore the social theory of science is a reflection upon the conditioning, and determination of scientific knowledge by society around it [Jamison, 1982, p.ii], and it may through the application of the same method reflexively turn upon the production of historical texts. As a result it draws upon the resources of history and the social sciences in order to address the normative concerns of epistemologists and sociologists of science. By contextualising these normative concerns the issues are reproblematised as concerns of evaluation and policymaking [Fuller, 1994, p. 591]. Social theorists of science are equally concerned with making "science aware of itself", and thereby transforming the social practice of science. This task of the metatheorist is unrealisable if the scientist is not enrolled into the dialogue on the social conditioning of knowledge[1]. Furthermore, it has been suggested that the project of social epistemology could allude to a prescriptive use of the philosophy of science, in order to develop more adequate theories and explanations [Hess, 1997, pp. 7–8]. This distinction, at the risk of generalisation could be illustrated as follows:

Philosophy	Social Studies
Prescription	Description
Normative	Empirical

In a much discussed book within the circle of science studies and less so within the traditional community of historians of science, Sandra Harding, indicates that we have today a fruitful conjuncture of post-colonial theory, feminist theory and post-Kuhnian science studies [Harding, 1998]. While post-Kuhnian studies may have initiated a major renewal in the history of sciences, but in post-colonial science and technology studies Harding sees the coruscation of a "second historiographic revolution". These studies bring fresh perspectives on the integrity of the European sciences, and more importantly disclose the close interaction between the European and non-European sciences, particularly since 1492. This they do by revealing the causal connection between the processes of European expansion and the growth of modern science and technology [Harding, 1998, p. 5]. Consequently, new spaces open up for interrogating modernization and development theory as well as the standard models of scientific and technological growth. Furthermore, they have challenged prevalent models of the expansion of European sciences and technology as well as reigning theories of the diffusion of scientific and technological growth. In addition, they have contested the script of modern science as a cultural universal, and counterposed it with a more polycentric model of the growth of several scientific traditions—albeit in some form of interaction with each other [Harding, 1998, p. 6].

This reconstruction involves distilling a version of postcolonial theory from the researches of postcolonial scholars so as to arrive at a positive characterisation of postcolonial theory of science. This is one of the prescriptive tasks of social epistemology. The table below contrasts the distinction between Eurocentric and postcolonial theory in terms of three constitutive elements: the theory of history, the theory of science, and the underlying theory of transmission. Accordingly, post-colonial historiography is multicultural and global[2] in extent and range and is at odds with the "isolationist history" produced in the imperial West. The latter histories narrated the past of non-European societies as "largely separate and self-contained chronologies, more or less isolated from each other". Breaking this isolation was the arrow of diffusion that commenced its journey eastward from Europe [Harding, 1998, p. 7] and enabled the construction of Eurocentric history of science. And finally, postcolonial reconstructions of science envisage science as context-bound, while for Eurocentric theory science is conceptualised as transcendental, and disengaged from social context.

Table 1: The distinction between Eurocentric and Postcolonial Theory

Constitutive elements	Eurocentric Theory	Postcolonial Theory
Theory of History	Isolationist	Multicultural
Theory of Science	Transcendent	Contextual
Theory of Transmission	Arrow of influence points eastward	Multidirectional arrows of influence constituting a network[3]

As suggested, this is a distilled version of postcolonial theory of science. Close scrutiny reveals that there is a diversity of postcolonial standpoints, some of which would certainly share or conform to theories of transmission and history indicated in the table above. In quotidian terms, postcolonialism indexes the end of colonialism. The formal end of colonialism prompts the enterprise of addressing the past of postcolonial nations afresh.[4] This enterprise is pursued from a range of positions and theoretical standpoints. Nevertheless, there could be disagreement among regions and nations concerning the end of the colonial project. For it has been argued by some African intellectuals, to take a case in point, that Black Africa has never reached postcolonialism, since the colonial project has merely transformed itself into a more subtle and pernicious form of colonialism—that of neo-colonialism or colonialism by other means [Williams, 1997].

The postcolonial and neo-colonial theorists do not share the same optimism in addressing their pasts and the visions they have of the future. Even within the postcolonial project, there do exist movements that seek to restore pre-colonial voices, institutions and practices, untainted by the interpretative gaze of the colonising West, and seek to centre-stage a pristine, undistorted image of pre-colonial society and knowledge forms. Whether this is a hermeneutically feasible project at all is another issue, but this standpoint would not subscribe to a multicultural theory of history or a theory of transmissions that is mapped by arrows of influence flowing in a multitude of directions. In fact, these reconstructions could appear as the reversed image of those projected by Eurocentric theory. Theories of postcolonial hybridity on the other hand integrate the oppositional discourse to colonialism that characterises the post-colonial project as it rewrites the colonised past, and a complicitous discourse that divulges how the modern colonial nation state, society and knowledge forms were co-produced by coloniser and colonised [Harding, 1998]. But coloniser and colonised connote stable meanings within a framework of particular kinds of colonisation. There is a remarkable shift of meaning when discussion shifts from the colonisation of the ancient world to the colonisation of the new world by settler communities. In the latter case, to what extent is it meaningful to have a theory of transmission embodying multi-directional arrows of transmission and influence, and complex networks of exchange.[5] This brief foray into postcolonialism reveals that the version of postcolonial theory that I have summarised in the table is at best one cognitively just postcolonial theory, and in fact the indexing of the constituent elements is just one *wish-list* that we possess. Albeit it is a *wish-list* best suited to the larger objective outlined in the introductory section.

Harding recognises that postcolonialism is a discursive space opened "both within and after the end of formal colonialism" [Harding, 1998, p.16]. Postcolonialism is not monolithic, and if so it could well be that there are strands in its fabric that are not multicultural either, and are the very image of the Eurocentric discourse that postcolonialism has ostensibly challenged [Elzinga, 1999, pp. 111–112]. In fact, if there are epistemic points of concurrence of post-Kuhnian science studies, feminism and postcolonialism, there are perspectives in all three discursive formations that could be embraced by post-modern epistemology as well. However, across the range of postcolonial standpoints, we notice some features in common. The production of scientific knowledge, on the one hand, is viewed from a contextualist perspective across the frame of standpoints. This is further evident in the uniform opposition to Eurocentrism in theory. In the next section, it will be argued that these by themselves are not sufficient for a postcolonial theory of science. The rise of social history as a genre, amongst several factors, had a very important role to play in destabilizing the Eurocentric study and theorization of history[6] [Gran, 1996, p. 2]. For the full potential of the *wish-list* presented above to be realised, certain other features will have to be conceptually integrated into this version of postcolonial theory of science.

WHAT NEEDS TO BE DONE TO INTEGRATE POSTCOLONIAL THEORY WITHIN A GLOBAL PERSPECTIVE?

This section raises a set of issues around postcolonial theory to surpass the horizon defined for it by Eurocentric theory. For postcolonial theory to be subsumed or enveloped within a global theory of science, certain positions immanent to the postcolonial standpoint will have to be revised. This is essential if it is to qualify as a theory of science in the first instance. The issues to be taken up here have more or less been transformed into antinomies that define different approaches to studies of science in society. These are the issues of knowledge and power on the one hand, and that of the internal and external accounts of science on the other. In the discussion that follows I shall elaborate upon the problematic in each case, and then suggest a strategy for resolution, so that we have a conceptual link with the theoretical issues raised.

Postcolonial theory, as the name suggests, is embedded within the interpretative frame of knowledge and power. Within a domain of the history of science, or the social studies of science, the salient problematic appears to be the deconstruction of forms of colonial domination in the appropriation and/or marginalisation of so called traditional forms of knowledge and knowledge related practices. Further, studies have recently been focussing on the substitution or erasure of the latter by the former. In a more contemporary context, postcolonial theory provides a frame of reference for those interrogating received paradigms and programmes of development and modernisation [Gupta, 1999], and thereby of deconstructing a central dichotomy of the modernisation discourse, that of tradition and modernity. Consequently, modernisation and development theory are concerns that are central to a postcolonial theory of science as well. This interrogation of modernity and development theory extends to the founding precepts of received history of science as well [Toulmin, 1990]. The philosophical discourse of modernity is founded on a universality that conceals the interests of specific social classes. High modernism proffers an "immanent critique" of this universality [Bhaskar, 2002, pp.26–7]. History legitimates the idea of modernity by the very dichotomies that constitute it, namely that of the ancient and the modern, West and non-West [Bhaskar, 2002, pp. 118–25]. Bhaskar alludes to five stages in the philosophical discourse of modernity. The period 1945–47 corresponds to the third stage. A feature of this stage is that it is characterized by the Rostowian theory of development, of the transfer of knowledge and technological practices from West to East. Basalla's proposal for the expansion of European sciences internalises these features of the underlying theory of transmission.[7]

The approach has certainly proven fruitful in clarifying the social relations and power play imbricated within structures disseminating and producing knowledge. Secondly, there is little to educate an informed readership of the cognitive issues at stake or the dynamics of the evolution of scientific ideas or theories. Studies on the creative assimilation of modern science in colonial societies that focus on the grey area between the external and internal have been few. But to transit into the realm of the cognitive, while remaining anchored within a conception of situated knowledge(s) requires an understanding of the creation and reproduction of complex networks for the production of knowledge. Before doing so we have to ask what needs to be done to render postcolonial theory symmetric.

IS POSTCOLONIAL THEORY SYMMETRIC?

The theory of science being discussed involves networks of knowledge producers and arrows criss-crossing in a multitude of directions. It would be necessary to examine how and whether such a theory would or could satisfy the criterion of symmetry [Bloor, 1991]. The study of science and civilizations has for long been a theme of investigation, but has very often been reduced to science within civilizations, wherein a comparative or cross-cultural perspective has been absent. When science is studied as a world system, then the history of knowledge production is accounted for within the frames of networked or connected or entangled histories. Consequently, the meta-theory underlying such an approach is of importance, particularly if it is desired that the meta-theory be symmetric enough to carry it beyond the self-limitations imposed by postcolonial theory.

A theory of history that aspires to the status of a global theory would advocate "macro-systemic, empirically embedded historical work concerned with world space and longue durée". The time scales involved in studying the phenomena of rupture are substantially greater than what historians are accustomed to in the history of science [Thapar, 1999]. Most research of a world systemic nature has focused upon political economy, though there have been important works on cultural and intellectual history, and of late science studies scholars have begun looking at it [Schott, 1998]. Such theories reject Eurocentrism in theory, or the inferences of Eurocentric theory. For the standard history of science this is tantamount to discarding any "construction of the unique 'genius' of Western 'man'". In terms of diffusion it puts in parentheses the direction of Western influence as well as the question concerning the origins of modern science. A complexly woven network of interacting cultures substitutes the theory of transmission and diffusion founded on a unidirectional flow of knowledge and influences. A third element weaves this complex web into an evolving system, and involves the recognition that "change involves multiple lines of entailed evolution or development, while simultaneously acknowledging increases in the scale and range of systemness" [Abu-Lughod, 2000, p. 113].

In discussing the world systems theory here I am not making a case for it, but consider it one in a genre of historiographies premised on a notion of systemicity, connectivity or entangled trajectories. How would such a theory of science and history fare from the point of view of symmetry and reflexivity? Conformation with the latter would possibly ensure that prejudice and distortion do not creep into historical or sociological reconstructions. The world systems theorists, who may be considered in this genre, do not hope to reach a higher order of objectivity in their historical accounts. However, "while there is no absolute metric against which we can measure truth in interpretation", there are methodological guidelines that ensure that evidence is connected with the real world, and how rhetoric is connected with power structure [Abu-Lughod, 1995, p. 90]. The notion of reflexivity is enabling for the perspective.

In fact, it could be argued that postcolonial theory itself problematises a fundamental "asymmetric ignorance" or the "inequality of ignorance" that underpins mainstream history writing [Chakrabarty, 1998, pp. 264–5]. This asymmetry arises from the historical practice of Western scholars to craft history without any reference to the works of non-European history. The gesture cannot be returned or reciprocated by the third world historian without the work running the risk of its quality being compromised [Chakrabarty, 1998, p. 264]. The conditions for universalisation do not require engaging with the non-West, while non-Western histories become local histories if they do not evoke the canons of the Western historical tradition. Is it possible to resolve this asymmetry?

In making this case for global history it is important to identify the elements that constitute the historians "vision" essential for recasting hitherto produced history as a global history. Procedurally recasting global history requires making judgements about the trustworthiness of the researches of other historians. A number of factors are at play in deciding these judgements, but two significant ones are: (a) Scepticism concerning explanations offered by locale-centred histories that have neglected non-local causes, (b) an appreciation that locale-centred histories could be impeded by tunnel vision from recognising that identical processes are occurring in other parts of the globe. The attempt to understand the process of closure is recognition of reflexivity and self-awareness, not because it guarantees objectivity, but because it could serve as an antidote to hubris [Abu-Lughod, 1995, pp. 90–3]. Such reflexivity could eliminate social theoretic and historical claims rooted either in nationalist historiography or celebrating civilisational exceptionalism.

Traditionally, studies of cross-cultural, transcivilisational and transnational exchanges from antiquity to contemporary times have normally been inflected with a Eurocentric bias. One of the strategies suggested to overcome this bias is by substituting interlocutors; or as standpoint theory suggests—by making the hitherto marginalized, ignored and suppressed speak. In other words, the selection criteria of historical source material are being broadened. While recognising that standpoint theory has turned the tables on traditional epistemology by valorising the perspective of the socially disadvantaged, Longino has identified a number of difficulties with the standpoint approach [Longino, 1996, pp. 266–270]. Consequently, while standpoint theory widens the base for more adequate theorising, the symmetry consideration would have to reckon with the possibility that non-Western historical sources, like their Western counterparts, maybe equally flawed. Widening the base does not by itself resolve the problem.

The historian would need to procedurally adopt a "triangulation that touches more bases". This is recommended since the historian can never stand "at some Archimedean point outside our cultures and our locations in space and time... Triangulation can get us farther out—but we as knowers are shaped by everything we have learned and read" [Abu-Lughod, 2000]. Abu-Lughod elaborates upon this notion of triangulation in practice: "I tried to put texts from different perspectives in dialogue with one another: for example, I self-consciously paired accounts of the Crusades as described by Christian and Muslim writers, or descriptions by port officials and by the merchants themselves of what happened to foreign traders in Chinese ports. I was trying to de-center accounts, to view them ex-centrically" [Abu-Lughod, 1995, p. 95]. Not only are different sources to be incorporated into the historical account but also they have to be paired off against each other. And the greater the number of points available for triangulation the more reliable will be the pattern proposed by the historian. Triangulation ensures symmetry at the level of the empirical reality we are engaging with, while in interpretive terms the reflexivity principle performs this task. Reflexivity is not merely limited to the manner in which the past conditions the present, but thereby conditions our sense of possible futures. Consequently, there is a prescriptive and political dimension to reflexivity [Fuller, 1999a].

A number of studies have undertaken a metatheoretic critique of Eurocentrism in specific disciplines. Blaut's book offers a significant critique of Eurocentrism as reflected in disciplines such as geography [Blaut, 1993]. But this critique of metageography has itself come in for criticism from within, and is evidence of implicit symmetry considerations being brought to bear metatheoretically. The primary criticism is that the centring of the "First-World Third-World Template" is a reflection of the "convictions about the world historical centrality of European colonialism" [Lewis and Wigen, 2000]. Surely this implicit assumption must be critically scrutinised, but the longue durée perspective cannot underplay the transformation and elimination of stable structures within colonised societies. This of course has been recognised by Lewis and Wigen who acknowledge that while Eurocentrism has overshadowed Afrocentrism in terms of the impact of its prejudiced vision and the harm caused, both betray "certain similarities in their geographical modes of apprehension" [Lewis and Wigen, 2000, p. 84]. Hence Blaut's metageography offers a critique of Eurocentrism, and recognises the asymmetry between Eurocentrism and Afrocentrism. The metaperspective endorses a symmetrical reading of historical context—this is a normative requirement embedded in a vision of history. The table below summarises continental essentialisms, other than the predominant Eurocentrism that afflicts contemporary social theory [Lewis and Wigen, 2000, p. 85].

Table 2: Theories of transmission and continental essentialism

Continental Essentialism	**Theory of Transmission**	**Contemporary Research Trends**
Radical Afrocentrism	Downplays Indian ocean world	Recent studies reveal the influence of Arabs, South Asians and South East Asians on African history
Indian Ocean interaction	Downplays East Africa; Produced by a Eurasia-centrism that has devalued Africa in the field of World History	Recent studies reveal the influence of Africa on the Indian Ocean regions, significantly on Oman and Southwest Asia.

Area-centric ideologies premised on either continental or religious essentialism suffer from the very same defects that afflicts Eurocentric metageography or metatheory. Lewis and Wigen subscribe to Frank's "three-legged stool" to balance the picture. Frank's research focuses upon the centuries preceding 1750–1800, a period during which Asia's economy overshadowed that of Europe [Frank, 1998]. Early modern history was, according to

Frank shaped by a long existing "operational world economy and not merely by the 'Expansion of the European world system'. Furthermore, this globe-encompassing world economy/system did not have a single centre but at most a hierarchy of centers, probably with China at the top". From Abu-Lughod's meta-theoretical perspective the historian is guided by theoretical assumptions regarding relevant variables and crucial criteria and for Frank these variables are largely economic; and from the perspective of world systems theory no single factor account "is likely to exhaust causation". The metaphor of the "three-legged stool" is not homologous with the procedure of triangulation, the latter being a generic concept to be applied to each of the domains: ecological/economic/technological/political, military/social, cultural/ideological. For a postcolonial theory of science to develop into a global perspective certain procedural revisions are imperative, that would guarantee symmetry and reflexivity.

IS THERE PLACE FOR AN INTERNAL ACCOUNT OF SCIENCE?

As has been argued earlier, it is contextualism that binds together different standpoints of postcolonial theory. Consequently, for postcolonial theorists an internal account of science may not be relevant. A postcolonial account of the growth and/or generation of knowledge that is not exhausted by a perspective of "science as the continuation of politics by other means", must engage with the content of science and provide an internal account premised on a theory of science, that does not demarcate the internal from the external as did the historiography from the early part of the last century. The problem, has been that, as Harding has argued, the internal history of science has revealed a tendency to be Eurocentric.

In order to contextualise this debate we would have to return briefly to the historiography of modern sciences. In the Baconian scheme, the history of science was an integral part of science. Science developed by climbing the "ladder of axioms", without skipping a single rung. The less general theories preceded the more general ones. The genealogy of a theory was thus proof of its validity. The French theoretical physicist and mathematician Laplace attempted to reconstruct the evolution of the Newtonian system carefully on such inductivist lines, and finally admitted that this reconstruction of the history of astronomy was a history as it might have occurred and not as it possibly did [Agassi, 1963, p. 12]. How was he to explain the deviation of hypothetical history from actual history? He had encountered a great deal of speculation in the work of Copernicus, Descartes and Bacon himself. Laplace was forced to abandon the Baconian idea that prejudiced people could not develop science. Agassi suggests that Laplace did not push the realisation that prejudices, could be useful, in which case "they were not as black as Bacon and others painted them", and thereby missed the opportunity to shrug off the cloak of inductivism [Agassi, 1963, pp.12–13].

Immediately after the French revolution a program of the institutional reform of educational institutions was instituted. During this period, it may be conjectured that the French savants and astronomers who authored histories of astronomy and mathematics as well, displayed an ambiguity in contrasting the algebraic and geometric traditions as characteristic of civilizations [Raina, 1999]. The institutional reform of science stabilised the role of the scientist, and the specialist history of science enabled the stabilisation of the identities of a rapidly diversifying terrain of disciplines. The production of these histories of science reinforced the disciplinary identities of scientists, and imparted a sense of "inner coherence" to the community of savants. It simultaneously purveyed the value of science to a non-scientific audience. Such historical texts presented an "antiquarian" or "monumental history" [Bos and Mehrtens, 1977, p. 11]. As cultural production both inductivism and nationalism facilitated the demarcation of what was to be considered science and thereby of managing boundaries. The priority dispute, an important feature of science since the days of Newton and Liebnitz, erupted in the realm of scholarship as well. The long and short of it was that with the retreat of the republican impulse and the restoration in the first decades of the nineteenth century, the devalorisation of the science of the non-West had commenced [Raina, 1999].

I wish here to nuance Harding's critique of internalism and diffusionist theories as the fountainhead of Eurocentrism in the history of sciences. Harding proposes three central ideas in the internalist account that predisposed history towards its Eurocentric bias. These are the ideas of the European miracle, the dark ages and the scientific revolution [Harding, 1998, p. 27]. The historiography premised on the idea that the arrow of influence points eastward is closely related to the idea of the European miracle and that of the historiography of the dark ages that emerged during the Enlightenment period or possibly earlier. The production of a particular genre of historical inquiry between 1750 and 1790 featuring the conflict between the ancient and the moderns was played up as part of the ideology of unending improvement, since the philosophers had come to believe that they had surpassed Greece and Rome [Bentley, 1997, p. 400]. After the French revolution the antagonism between a culturally and institutionally specific conflict of the ancient and the moderns may have been transferred to the non-West or the other ancient civilisations, while Greece and Rome may have been re-constructed as the spring of the modern West. Consequently, the discounting of time [Fuller, 1999], which in another sense was also a discounting of the past, so essential to the modern era reinforced the devalorisation of the knowledge systems of the non-West.

Newtonianism and inductivism were the strongest scientific and historical frames available to historians of science in the late eighteenth and nineteenth centuries. The fascination with the history of astronomy of India and China in the eighteenth century could not be accommodated within the history of astronomy and mathematics that was being drafted in the second half of the eighteenth century if the historian-astronomers adhered strongly to the tenets of inductivism. Inductivism drew up a strong criterion of demarcation between black theories and white theories. Agassi offers a critique of inductivism and inductivist history of science in particular. The three points that Agassi raises are: (1) Inductivist historians of science tended to ignore scientific schools of thought, intellectual climates and trends, and thus they could not explain the increasing interest in a particular field at a historical juncture, since these reasons do not always have to do with evidence, (2) the ignorance or inability to deal with scientific controversies or the idea of competing theories, (3) they held that the Renaissance revolution against prejudice and superstition had been the only revolution in the sciences [Agassi, 1963, pp. 23–26]. There are other dimensions of this critique but that do not concern our immediate problematic of the institutionalisation of Eurocentrism. I argue instead that it is not all of internalist history of science that is Eurocentric but the inductivist history of science that is inflected with a Eurocentric bias.

If inductivist history of science has been Eurocentric, has a history of science underpinned by conventionalist philosophy of science offered different possibilities for integrating the history of the non-West in the larger narrative of the history of science? I think the answer is in the affirmative, for two reasons—historical and philosophical. Historically, scientists predisposed to conventionalist philosophies of science have had a very different perspective of non-Western knowledge systems. I allude here to three physicists—Mach, Schrödinger and Pauli in their specific relation to Buddhism and Vedanta and of course there is the case of Bohr and his evocation of Chinese symbols to elaborate upon his idea of complementarity. The philosophical argument is extended from Joan Richards work, where she argues that the history of mathematics is not amenable to a Kuhnian notion of revolutionary change and that the history of mathematics did not display the dramatic and discontinuous change that marked the sciences [Richards, 1995, p.123].[8] In which case, the practising mathematician and the historian transits across different historical periods and brings them into the domain of contemporary mathematical relevance. Joan Richards writes: "Because old mathematics never dies, mathematical history is not whiggish in the strict sense of the term". The Kuhnian notion of history complicates the notion of progress, but still maintains the distinction between past and present, for what characterises the history of mathematics is "timelessness, not progress" [Richards, 1995, p. 125]. However, historians of mathematics such as Judith Grabiner, suggest that revolutions do occur in mathematics, and that revolutionary theories do alter conceptions of truth prevalent among mathematicians.

The turning point in the historiography of science is paradoxically at the interesection of celestial mechanics and the decade following the French revolution. It is at this point in post-enlightenment historiography that the Eurocentric history of sciences crystallises in the institutional domain of the Acadèmie des Sciences. I say paradoxically because it was Laplace himself who was a staunch defendant of both Newtonianism and inductivism, just when Kant had commenced his discussion on the role of the *a priori* in the theory of knowledge. In some sense while Laplace's inductivism belonged to the golden age of French science, it was more or less concurrent with the birth of conventionalism [Agassi, 1963, p. 28].

However, we do know of the important role of internalist historians of mathematics in confronting Eurocentric history of science. For example, we have the work of King, Saliba, Sabra, Kennedy. The work of historians of mathematics, such as that on the history of mathematics in the Arab world [Rashed, 1994] and the other on the history of Chinese mathematics [Chemla, 1998] is of consequence. Most of this genre of research is situated within the internal history of mathematics, and confront the Eurocentric history of science headlong, albeit differently. Chemla does so by addressing the mathematical version of the demarcation problem; namely by questioning the object historians of mathematics have taken for granted. She stipulates her metatheoretical position at the outset: "only an international approach to the history of mathematics can provide an adequate framework to capture the historical processes which have constituted mathematical lores around the world" [Chemla, 1998, p. 790]. The internal history of science continues to possess and develop conceptual and interpretive resources to work towards an international and globological perspective.

How does Chemla undertake this with Chinese sources? In order to embed Chinese sources in the world corpus of mathematical writing the historian establishes what topics and interests the authors of these sources shared with other knowledge generating communities. Beyond the question of who invented the place value decimal system, The Nine Chapters reveals that communities of practising mathematicians in China and India had established substantial communication [Chemla, 1998, p. 793; 1994]. Secondly, departing from the traditional concern of transmissions, the history of the theory of equations is looked at differently. We recognise the existence of different concepts and practices in varied culture areas. These different mathematical traditions elaborated an object in diverse ways that are presently recognised as the same. A conceptual variety is today conceived as "a unique mathematical object" [Chemla, 1998, p. 794]. The historian of science then reveals the contextual meaning of these mathematical objects, rather than mobilising them in an exercise of boundary marking. There are directions and programmes underway within internal history of science that are moving towards a truly international perspective. We must not forget the researches of those internalists who pointed out the inadequacy of the standard internal picture of science [Pingree, 1992].

The late nineteenth century witnessed the emergence of conventionalist philosophy of science—also internalist, strains among them improvising on Kant's theory of knowledge. The two counter-inductvist propositions that characterised this movement were: (1) theories do not emerge from facts, and (2) the adoption of one or another attitude to a knowledge system or theory is an intellectual choice. The choice between frameworks is determined by criteria such as simplicity or the economy of formulation [Agassi, 1963, pp. 28–30]. Pierre Duhem, the conventionalist, Roman Catholic and French nationalist can in this imaginary dialogue between inductivism and conventionalism turn out to be radical. There is a gradualism in the development of science that marks both the work of Duhem and Bacon, yet Bacon's approach to science was radical inasmuch as in its own time it offered a critique of the science of the Middle Ages, while for Duhem even Copernicus had immediate predecessor's [Agassi, 1963, pp. 31–32]. However, there were possibilities within Duhem's conventionalism from today's perspective that make Duhem the radical and Bacon the conservative. The conventionalist thesis that a knowledge system may be indebted to an opposing one, and the idea that science never commences from a clean slate, may have retained the possibility of looking at other knowledge systems in more dialogical terms.

This encounter with the demarcation problem occurs at two levels: the first epistemological and the second institutional. At the epistemological level, this may require questioning the knowledge ideal of science as a cultural universal, and looking at the modalities of exchange between different situated knowledge(s), founded on divergent epistemic precepts. Such an enterprise would be an epistemic one and would have to be informed by historical and anthropological investigations. Secondly, disciplines such as the history of science have played the role of demarcating or marking boundaries. Consequently, the history of disciplines and the politics of knowledge surface in the examination of the constitution of different sciences.

POSTCOLONIAL AND MULTICULTURAL THEORIES OF SCIENCE: WHAT IS AT STAKE?

The engagement with postcolonial knowledge qua knowledge founded on a principle of epistemological egalitarianism draws us beyond the terrain of the postcolonial to a wider field of the multicultural. The field is probably more problematic than that of the postcolonial, and mined with differences both in political ideology and conceptions of knowledge. However, it may be suggested that the idea of a multicultural science has its virtues as a theory of knowledge, since it is not only about the politics of knowledge. In other words its scope is broader than that of postcolonial theory, though it does not exclude it. The idea of a multicultural science is by definition reflexive. The term connotes the image of an ecumene of science, which cannot but be founded on the notion of reciprocal exchange and subsequent transformation. Thereby it may not suffer from the drawbacks of standpoint theory, and its potential is realisable if symmetry is built into the theory. Ontologically, it has a tendency to be splintered by relativism, but if constrained by norms of strong objectivity and robust reflexivity these centrifugal possibilities could be restrained [Harding, 1998]. But in order to grapple with a multicultural theory of science, it is necessary to grapple with the historiography of both modernity and modern science from a multicultural perspective. In grappling with these issues the problematic concern for long has been the theory of transmission of science and the onset of modernisation in non-Western contexts.

Till quite recently, two underlying assumptions of theories of modernity and modernisation went more or less uncontested. Social science theory considered modernisation to be a "process of the global diffusion of Western civilisation and its key institutions". During the high tide of "developmentalism" the convergence thesis was more or less taken for granted. According to this thesis the expansion of modernity and the global diffusion of the institutions, structure and culture of modernisation would eliminate differences among nations and civilisations. The persistence of difference, if it continued to exist, could be explained in terms of the endurance of pre-modern factors that would of course be eliminated with the passage of time. There is today less confidence in this idea of convergence. For convergence was neither validated by the experience of the developing countries, nor did the developed nations demonstrate such convergence. Consequently, it has become necessary to reappraise the process of modernisation in terms of the crystallisation of new civilisations rather than the repetition of a process that commenced in Western Europe, in other parts of the globe [Eisenstadt and Schluchter, 1998].

The second assumption that has come to be questioned relates to the nature of interfoliation of the cultural, structural and institutional premises of Western modernity. This assumption has been questioned for it is now argued that the expansion of modernity has not produced a single civilisation. On the contrary the cultural codes of modernity were naturally shaped by the codes of the societies that were exposed to new external and internal challenges. The starting point, one revisionist theory would argue, of this renewal was the "cultural program of modernity as it developed in the Europe". But these very societies creatively reinvented and applied these developments to inaugurate multiple modernities. These processes of reinvention were associated with the globalisation of cultural networks and channels of communication [Eisenstadt and Schluchter, 1998]. On both counts convergence stands challenged, for this diversity of modernities undermined convergence. Furthermore, both assumptions were interwoven into the explanation of the non-emergence of modernity on the Western pattern.

The recognition of the multiplicity of modernities—"the self-evident phenomena of multiplicity of modernities" [Wittrock, 1998]—has required returning to the study of non-Western societies with a new social theory, which at the same time avoids the pitfalls of the previous approaches. Three methodological fallacies are to be avoided at the very outset: (a) the idea that there existed only one modernity, (b) the investigative gaze from the West to the East was legitimated by the concept of Orientalism, (c) both multi-culturalism and globalisation announce the emergence of a new axial principle, that of post-modernity. The next question that would need to be addressed is the extent to which these multiple modernities were shaped by the historical experiences of the concerned societies. In other words the internal dynamics of modern non-European civilisations would have to be approached emically without relinquishing the advantages of the comparative method [Eisenstadt and Schluchter, 1998].[9] To this end empirical studies would contribute to comparative and historical thought, and thereby reveal the modalities of formation of different modernities.

The reappraisal of the multiplicity of modernities by the comparative method is premised upon the historical experience of early modern and Enlightenment Europe taken as an ideal type for the assessment of the differences in the historical experience of other civilisations. The key conceptual categories in the study of modernisation are those of the nation state, constitutional republic, public sphere and civil society. The key social institutions emblematic of European modernity were the (1) democratic nation-state, (2) liberal market economy, (3) science pursued in research-oriented universities. These institutions have spread throughout the globe to produce a "heterogeneous modernity". Wittrock identifies three principal reasons for the neglect of multiple programmes of modernity. The first is a product of philosophical Eurocentrism, wherein during the nineteenth and early twentieth century modernisation was synonymous with Westernisation. The second relates to the academic neglect of intellectual and cultural process underlying political and institutional change.[10] And thirdly, the radical institutional break in the eighteenth century with traditional forms of social and political order and the emergence of the institutional features of the modern age blunted interest in the study of long waves of change in different cultures and civilisations [Wittrock, 1998]. In order to reverse the effects of this neglect we would require a gaze not only from outside the Euro-American world but over a duration that is long enough for the internal dynamics of other civilisations to become visible.

This comparative interrogation holds out a number of challenges for the history of science inasmuch as the history of science as a discipline is constituted in the idiom of modernity, with modern science being a point of departure from the past. The binary oppositions indexed in the history of science are all centred on the idea of modernity and the scientific revolution. Furthermore, post-Kuhnian theories of progress in science themselves pose a number of questions around the philosophical idea of progress. In fact, the Sartonian programme of the history of science draws sustenance from the Enlightenment theory of knowledge, and finds its culmination in Sarton's view that the notion of progress has no substantial meaning outside the domain of the sciences.

Underlying the European vantage point is an assumption concerning the processes of global diffusion. The multiple modernities frame looks for connecting principles and processes across civilisations. Thus Pollock indicates that from the twelfth century onwards there was a global shift from transnational cultural ecumenes to vernacular cultural orders that ushered in the modern nation-state as the "archetypal political order of modernity" [Pollock, 1998]. This holds a number of implications for the theory of modernity and the scientific revolution founded on the shift from Latin and Greek to the vernaculars. In fact, it changes the focus of the question of science and the increasing access to scientific ideas. Further, researches on early modernity in Europe and Eurasia suggest that during the period 1350–1800 there was both a growth in cosmopolitan cultural ecumene and vernacular cultures that had already been in existence for a millennium in the near absence of an empire on the Indian subcontinent [Pollock, 1998]. The historical experience of China, Japan and India reveals the inadequacy of concepts such as civil society and public sphere, and even the assumption that social, cultural and political dimensions of early modernity in Europe were interwoven.

Contrary to conventional modernist historiography, Pannikar has argued that the period of pre-colonial rule in India was not one of decadence and decline. The Mughal Empire was certainly showing signs of crumbling, but there was a cultural renaissance in the spheres of art, music and painting at the periphery of empire. But this cultural renaissance did not permeate the sphere of the sciences, though the traditional sciences continued to be practiced, and the king-astronomer Jai Singh was in dialogue with the Jesuit and secular astronomers from Europe and France in particular [Pannikar, 1980]. This brings us back to the point of whether the institutional, structural and cultural elements of early modernity were as integrated as they were in Europe. The experience of China and Japan during the period of High modernity was quite similar to Europe to the extent that a genuinely public sphere developed that was in contrast to the very limited sphere of central bureaucratic order.

The revised history of modernisation could be considered a reaction to the metahistoriography of modernisation as "mission civilisatrice", elaborated by an osmotic model for the flow of knowledge and artefacts. The movement towards a multicultural theory of modernisation has altered the focus of theory in three distinct realms: institutional, cultural and sociological. These have to do with the theory of state, the theory of science and the theories of modernisation respectively. A multicultural theory of science authorizes readings premised on far more entangled histories. Post-colonial societies have produced a variety of re-readings of the history of the colonial period. These are germane to an understanding of the inauguration of modernity and, important because this is also the era when modern science is introduced into the non-European world. These readings are ambivalent in their understanding of modernisation as a hegemonic imposition of the civilising mission of modern Europe. And within this framework a number of historiographic positions and nuances are encountered. The middle ground is occupied by those situated within either a multicultural theory of science or those who come to the subject with the appreciation that traditional osmotic models of the diffusion of knowledge are frightfully inadequate.

However, the recent manifestation of postmodernism in Indian historiographies has resulted in a reverse essentialisation of Europe and European categories of analysis—that led "ineluctably to the reification, and essentialisation, of a certain "version of Europe"". The diaspora of non-Western intellectuals and their reception in Euro-American universities have produced a rejection of post-modern decentredness, and a reaffirmation of the notions of centredness, difference and cultural authenticity—notions that resonated with the prevalent intellectual climate that was sympathetic to the search for ethnic authenticity, identity politics, and "celebrated diversity and multiculturalism" [Eaton, 2000, p. 678]. The transition to postcolonialism from postmodernism was equivalent to a lapsing to the Europe-India dichotomy [Eaton, 2000, p. 689]. Post-colonialism ended up ironically bringing to centre-stage the very historiographic elements it sought to rid history off. For one, the precolonial and colonial fixation of the postcolonial critiques was in a way a re-affirmation of the Rostowian "tradition"-modernity dichotomy [Eaton, 2000, p. 72]. This binary temporal division was played out even in the history of sciences in the former colonies in the much-discussed Basalla model of colonial science [Basalla, 1967]. Secondly, post-colonialism ended up producing a kind of neo-Orientalism as empirical field work was discounted by post-modernist epistemology, and as colonial records were subject to discourse analysis [Eaton, 2000, p. 73].

Multiculturalism both in academia and pedagogy, reflects deep social changes marking contemporary societies. The debates are stamped by the concerns of multiculturalism in different regions of the world. But the term connotes at least two different social phenomena. The first connotes multiculturalism as ideology. The second sense is that of multiculturalism referring to the reality "of our increasingly interdependent and intertwined global society" [Fox-Genovese, 1999]. The orthodoxy sees multiculturalism as a revolt prompted by anti-Western sentiment, and a rejection of both rationalism and science. This is a consequence of a geopolitical reconfiguration that has occurred over the last half a century and the process continues, and has in turn reconfigured the topos of social theory. This world system is conceived as a moving landscape of rising and declining centres. And if we were to adopt a posture of epistemological egalitarianism then there is a pedagogic agenda that will socialise future generations into the idea of the multiculturalism as an ensuing process binding civilizations from the past into the future [McNeill, 1999, p. 548].

In an earlier paper [Raina, 1999a] I had discussed developments in the sociology of knowledge and history of science, and the renewal in the history of sciences. The context of renewal was discussed with reference to the history of modern science in the non-West. This history had in the first half, and the first few decades of the second half, of the last century been framed by a theory of transmission, best exemplified by the Basalla model for the expansion of Western science. Those theories were premised upon a conception of modernity and a master narrative of the process of modernisation. This essay engages with postcolonial and multicultural theories of science, informed by developments in social theory. In that sense it is also a plea for historians and theorists of science to look beyond their disciplinary boundaries.

The essay elaborates upon the limitations that deter the realisation of a global vision of history. This it does from the perspective of a prescriptive theory of science. The social theory of science reflects upon the conditions of emergence of "scientific disciplines". Furthermore, it bears a responsibility towards examining the nature of knowledge generated while examining other knowledge generating endeavours. As remarked at the outset, theories of history, could be tested/examined by the/a theory of science committed to playing the role of agent of democratisation. One way of playing this role is by privileging the perspective offered by "the weakest power base" or that privileges perspectives that: (a) "estimate the most uncertainty in a situation", (b) may/may not be inclined to a localist epistemology conflicting with only those universalistic models that are "insensitive to nuances of particular cases" [Fuller, 1999a, pp. 412–3].

The foregoing discussion thereby seeks to set up a process of rethinking theories of diffusion and has taken up a contemporary debate on metahistory and examined it from the point of view of an adequate historiography for the global history of science. Standpoint theory, symmetry and reflexivity have been the yardsticks deployed to gauge the adequacy of the historiography to perform the task. However, procedurally this could ensure that we arrive at a better account. In political terms of course the side with less cognitive authority would stand to gain from a symmetric treatment. While this would serve to compensate for the distortions caused by a dominant theory, the danger of recreating new versions of regional or continental essentialism needs to be procedurally curtailed.

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ENDNOTES

1. Fuller's critique of the sociology of science is directed at its patent revisionism, in so much as it never rises up to its revolutionary potential. Thus he compares the accounts of the sociologists of science as "trying to understand the nature of Roman Catholicism by closely studying what transpires in the Vatican backroom and at High Mass". This would reveal little about the proclivities of the faithful. Consequently, sociologists have merely argued for a revision of the "philosophical talk about science" [Fuller, 1995, pp.120–1].
2. The globological approach to history that Andre Gunder Frank seeks to develop is not so much multicultural as multicentric. This becomes evident if we go by his citing of Perlin: "Whether in the ninth and tenth centuries, twelfth and thirteenth centuries, or seventeenth and eighteenth centuries, the world has always been complex in its connectedness...The continuum of medieval and early modern times has no single centre, not even a handful of particular centres conceived as a source of affecting integration. Instead its characteristic is prolific multicentrednes" [Perlin quoted in Frank, 1998, p.52].
3. The idea of multidirectional flows runs counter to the older frame of regional centrism.
4. One could ask with Dipesh Chakrabarty what the enterprise of history means without the nation state [Chakrabarty, 1998].
5. For a very different reading see [Griffiths and Robin, 1997].

6. Gran has identified nine propositions that social historians have contested. These could be further regrouped in terms of European exceptionalism, the conceptual or analytical distinguishability of the West from the rest, and the West as the fount and dynamo or motor of change [Gran, 1996, pp. 2–3]. There is in the process a collusion of racism and science as this dominant historiography frames the standard picture.
7. For a discussion see [Raina, 1999a].
8. The interesting parallel here is that of the Lakatosian argument, of the shelving of research programmes and not of their rejection.
9. Eisenstadt and Schluchter suggest that the comparative method differs from evolutionary approaches in that the former does not interpret difference as deficiencies. On the contrary "it interprets differences as deviances" from an ideal type used as heuristic. But is that a valid characterisation of evolutionary approaches. In the social sciences, other than the social Darwinist genre of theories, evolutionary theories tend to distance themselves from teleological explanations, and are not necessarily judgemental.
10. The historian Sanjay Subramanian remarks that historians have failed to observe a number of important transformations in early modern society on account of an "excessive focus on the emergence of the nation state and the ideologies that go under the name of nationalism... " [Subramanian, 1998].

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J.N. Mohanty

Jean-Paul Sartre and the Three H's

Contemporary French philosophers, including Sartre, stand in a strange relationship to three German masters, Hegel, Husserl and Heidegger (often referred to as the three H's). Two others, to whom the French had to relate, positively or negatively, have been Marx and Freud. Earlier in his life, Sartre thought within the framework set up by the first three, rejected Freud and neglected Marx. Gradually, he distanced himself from the three and came closer to Marx as well as to appreciating Freud, although he never became a Freudian. In this essay, I will briefly delineate the way the three, Hegel, Husserl and Heidegger, influenced his thinking, thereby insulating him from Marx and Freud. I will not show how with the slackening of the ties of the first three, he could move closer to the second two. Nevertheless, it is amazing how close Sartre was to the three Germans, while fighting the German occupation. Of the three, let us recall that the question regarding Hegel's relation to the ideas of the political right has always been raised, but never resolved; Heidegger's closeness to the Nazis, at one time at least, is well-documented; Husserl's record, of all three, is clean, untainted by political misjudgments, and rather shines as a beacon to European philosophers' rational projects. Sartre, who became the high-priest of individual freedom; later, of the rights of the worker, and always of the irreducible status of individuals' choice of his own destiny—how could Sartre be a follower of Hegel and Heidegger, of all persons? I will reflect on this question at the end of this essay.

In 1929 Husserl delivered five lectures at the Sorbonne, and to show his respect for Descartes, the great French thinker—the lectures were held at the Descartes Auditorium—and he named his lectures *Cartesian Meditations.* The French edition soon appeared; but not satisfied with the seeming Cartesianism of the lectures, Husserl withheld publication of the German version (which was published after his death). It is the *Cartesian Meditations* which Sartre read as a young man. Most French thinkers of that time learnt their Husserl from these lectures, and from the account of his philosophy published by one of his French students Gaston Berger, who in the late fifties, was the Consulate General of France in Calcutta and with whom this author had many interesting conversations about Husserl and Sartre. He was already reading Heidegger's 1929 major work *Sein und Zeit* of which Alphonse de Waelhens had published a brilliant French translation. Sartre spent a semester at Freiburg listening to Heidegger, who had succeeded Husserl in the chair in Philosophy at Freiburg, but some time afterwards, the entire year of 1933, he spent in Germany, mostly in Berlin, reading Husserl and Hegel. At that time, in Paris, a Russian émigré Alexander Kojève was giving a series of private lectures on Hegel's *Phenomenology of the Spirit.* Sartre attended those lectures, along with Merleau-Ponty, Aron Gurwitsch and Hannah Arendt (both German refugees) and of course the great French Hegel scholar Jean Hyppolite. Kojève's lectures gave impetus to a Hegel-Renaissance in France. Sartre assimilated all three influences—they all converged in his classic work *L'etre et L'neant* (*Being and Nothingness*). Before that he had written a small book *The Transcendence of the Ego* in which he had critiqued Husserl's theory of the 'I' or ego as the source of intentionality. I will begin this account by first giving a brief exposition of Husserl's theory of intentionality and then stating how Sartre both appropriated and critiqued that theory.

Husserl and Sartre: All consciousness—synonymous with 'experience'—on Husserl's view, contains two elements: sensations, called by him hyletic data, and acts (such as perceiving, imagining, desiring, thinking) which are intentional, i.e. have an intrinsic directedness towards some object or other. The object which consciousness is about (or, 'of') may not exist, as when one sees a mirage, believes in ghosts, thinks that the present King of France is wise, or imagines a world free from all human suffering. What lends this object-directedness to consciousness is the further property that every conscious act contains within it a meaning, in German a *Sinn*, which consciousness imposes upon the given data and interprets them as exemplifying that meaning, such that everything in the world has a meaning for consciousness. In order to unravel the process—both temporal and historical—by which consciousness makes possible or 'constitutes' world of meanings, Husserl recommends a method known as *epoché* or bracketing, by which we suspend all our pre-conceived belief about things—scientific, metaphysical or religious—and describe how consciousness or experience functions in generating them. As so functioning, our consciousness is called by Husserl 'transcendental'. The structure that Husserl discovers is:

ego ('I') → acts (transcendental) + *hyle* (data) → Meanings.

The ego or the 'I' is the source of the acts; the acts generate meanings. Our world, as it is for us, is a texture of meanings. A culture is a sedimented structure of meanings. In Sartre's language, the human reality secretes meanings, an extreme case of which is 'meaninglessness'. For the world to appear meaningless is a form of meaning the world may have for a consciousness (as in *Nausea*).

In this first critique of Husserl, Sartre radicalizes Husserl's idea of intentionality by getting rid of the 'I'. In its pre-reflective life, Sartre insists, there is no 'I'. Pre-reflective consciousness is rather an impersonal field, totally engaged with its world. Ask a person eagerly waiting to board an oncoming bus to describe her consciousness, she would not say 'I am waiting to board the bus', but rather "see that bus, it is at last there". To describe Sartre's pre-reflective consciousness is to describe how the world appears in it. It is only reflection which sets us an 'I' as the source of intentional acts. Pre-reflective consciousness is non-egological. In *our* pre-reflective experience, the fields of consciousness intersect, thereby making inter-subjectivity possible. But to this theme I will return a little later. Regarding the thesis that the 'I' is a product of reflection, my friend Dagfinn Føllesdal has a nice analogy: Think of the light in your refrigerator. You open the door and the light is on, otherwise there is no light.

Besides (i) being intentional and (ii) free from 'I', the pre-reflective consciousness is (iii) completely transparent. It is how it appears to me to be; there is nothing in it that is hidden from my view. Combine these three theses, and you can see how nicely Sartre's very important conclusion follows: namely, that consciousness is *nothingness*, which does not mean that there is no consciousness, but in his way of saying that consciousness is not a thing, it does not contain anything or thing-like entities such as ideas, images; it has no *essence*, it is a process, it can choose to become what it is not, its fundamental activity is to *negate*, including self-negation (as is exemplified in suicide). Such is consciousness, which Sartre sometimes calls human reality or existence. Being nothingness, it is free, not bound by any laws. In the jargon of Hegelian logic which Sartre liberally uses, it is being-for-itself.

Hegel and Sartre: Sartre's *magnum opus* is called *Being and Nothingness*; I have explained the second term i.e., Nothingness. A word now about 'Being'. Being is the world, the totality of things, it is inert, massive, subject to laws, determined. Consciousness is always open towards Being, gives it meaning, negates it to assert its own freedom. The relation between the two is dialectical. The two are opposed to each other. Yet this anti-thesis has no reconciliation in a synthesis—contrary to the goal of Hegelian thought. Nothing can be both being-in-itself and being-for-itself. The idea of God is the idea of something which is both—an impossibility. Sartre uses this argument to prove that there is no God. Besides, he needs to deny Gods' existence in order to preserve human freedom. This is the place where I will recall two of his famous statements: first, existentialism is humanism. Second, existence precedes essence. The second statement needs a word of explanation. Classical metaphysics, Sartre points out, believes that essence precedes existence. Take my case: before God created J.N.M., He had in his mind an essence of J.N.M. in the same way as sculptor had in his mind an idea of the statue he was going to carve out of a block of marble. But if my essence was already there in God's mind before I was created then it was pre-ordained what I was going to be—e.g. a saint or a sinner. Then there is no freedom. Sartre rejects the idea of God and the priority of essence. I, by my free choice, can make myself a saint or a sinner. Metaphysical thinking ascribes to J.N.M. an eternal essence. Sartre, on the contrary, held that the essence of human reality is to be what she is not. Most people regarded Gevet to be a petty thief, a sinner. Sartre made him a saint. Consciousness is free to give itself a character. So we can say, Sartre's dialectic has no overarching synthesis.

One of the finest chapters in *Being and Nothingness* is devoted to inter-subjectivity. Here he improves upon Husserl's Cartesian Mediation V, devoted to the same theme, but he also appropriates some of Hegel's best insights. For Husserl, the problem was: how I know the other ego as an ego like me. It is a cognitive problem. Hegel's influential chapter on "Master and Slave" in the *Phenomenology of the Spirit* (1807) argued that my relation to the others is primarily practical. Each self wants to dominate over the other and to reduce the other to nothingness. This ensues, as a result, a battle for life and death. The one who wins is the master-consciousness; one who is defeated becomes slave. By dialectic of history, the slave is destined to be the master, and the master the slave. Taking his ideas from Hegel, and in a masterly manner, Sartre describes how one self—in every day life, in sexual relations as well as in political relations—tends to reduce the other to an object, i.e. to cease to be a human reality. I will ask my readers to read the discussion of 'look', which is a masterly phenomenological description. The key point is this: I suddenly discover, in a party, that another person is steadily looking at me. Or, in a more strange situation, a woman discovers that two eyes are peeping through the key hole at her. The look tends to freeze you, to rob you of your subjectivity and to reduce you to a thing.

Heidegger and Sartre: Insofar as Sartre understands human existence in terms of 'consciousness' he is closer to Husserl. But his pre-reflective consciousness again incorporates Heidegger's understanding of human existence as 'being towards the world', as an openness towards Being, as 'condemned to be free' and wish the consequent burden of 'anguish'. He views Heidegger as a Husserlian, and Husserl with the Heideggerean sensitivity for existential situations demanding free choice. And he supplements both with the categories of Hegelian dialectic. His characterization of Heidegger's position as existential humanism has been rejected by Heidegger himself and the idea of 'humanism' critiqued by Derrida. He imbibes from Heidegger a thoroughgoing rejection of essentialism, but his anti-essentialism is more radical than Heidegger's, leading to his thesis of 'nothingness' of human reality. He departs from Heidegger on another important point: human reality/consciousness is fully transparent—a thesis which makes Sartre insensitive to both Freud and Marx, while Heideggereans have found both Freud and the young Marx most congenial for them.

If consciousness is fully transparent, there can be *no* Freudian unconscious underlying my conscious choices. There can be no hidden motivations, no scientific psychological determination, no unrecognised 'class interest', which for Sartre are all theoretical constructions which distort the lucidity and translucency of consciousness. It is considerations such as these which led Sartre to propose a new form of psychoanalysis, known as existential psychoanalysis in which the Freudian concept of the unconscious is replaced by his own idea of "bad faith". A young man for the first time holds the hands of a new girl friend, he tells himself that that was an innocent gesture while knowing at heart that he has secret sexual desire for her, which he would not admit to himself. His not admitting to himself what he knows to be the case is an act of bad faith. It is transparent to him. All human relationship is distorted by bad faith. Even as bad faith consciousness is transparent to itself.

Husserl struggled in his lifetime to come to terms with the Freudian unconscious, both having been classmates under Brentano in Vienna. Heidegger rejected full transparency of human existence to itself. All human relationship to each other and to the world—in his very abstract jargon, *Dasein's* understanding of Being—is always in the middle zone of light and darkness, knowing and not-knowing, concealment and unconcealment.

I will not, in this brief essay, discuss how Sartre had to modify his philosophy to be able to accommodate Marxism, but when he did, his young existentialist ex-admirers took out a coffin in Paris on which was written "Sartre is dead." His long time friend Merleau-Ponty broke away from him. Merleau-Ponty wanted to save the ambiguity of experience from the objective, deterministic thinking of Marxism. Sartre nevertheless remains the greatest French philosopher of the last century, and although partially overtaken by Merleau-Ponty, Derrida and Foucault, he is sure to get back that position so eloquently formulated in *Being and Nothingness.*

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Ashim Kumar Chakravarty

Beauty and Aesthetics in the Cradle of Organic World

Beauty reveals itself beyond boundaries, beyond norms. It has only one base quality, of being very pleasing. One can perceive the beauty without being armed with any rigid definition for it. Again, something so beautiful for one may not arouse the same sense to another. Possibly that is why, 'beauty is in beholder's eye'. A beholder is guided by one's own physiological sense, experience, and of course guidance from elders or society at large.

As a life-scientist it will not be my part of the job to raise and answer questions that have vexed theorists of beauty and art. I encounter it in the expose of organic world and enjoy its presence without asking whether it is subjective or objective, real or unreal, natural or non-natural, whether 'beauty' is definable or indefinable.' Beauty certainly is there, and that is the contextual theme in the article.

The material base for beauty is vast to a life scientist and the logical derivatives from it are enormous. Moreover, life scientists are privileged to claim that the realization of and contribution to *beauty* are major features of the living world.

EVOLUTION BROUGHT IN BEAUTY AND ITS PERCEPTION

Some one thousand million years ago, emergence of life on earth was possible for the nature of elements, water, environment and optimal influences of the Sun and other celestial bodies on the earth. The emergence of life was preceded by the evolution of the universe, 13 to 15 billion years ago, and it took 2 billion or two thousand million years for chemical evolution on one planet, earth, for the emergence of living materials from inorganic elements. For the last one thousand million years the early living materials have been evolving through organic evolution to very many different species, from amoeba to man. The story of three phases of evolution, evolution of the Universe, chemical evolution and organic evolution is wonderful and would not get proper weightage without the occurrence of the fourth phase of evolution—the cultural evolution, involving the evolution of mind and its acts, apparently restricted to one species of animals—*Homo sapiens*. *Sapiens* means 'wise' denoting the wise creature of the genus *Homo* which is simply the Latin word for 'man'. The species is the only now-living member of a family Hominidae under the order Primate. Evolving of *Homo sapiens* and cultural evolution have much to do with the concept of beauty and aesthetics. In other words, the earth had to wait for about 4.6 billion years, since its appearance as a planet, for realization of beauty.

Evolution is a great process, not only does it bring in multiple forms, it also made possible the appearance of sense, sense organs and neural coordination of external stimuli with internal physico-chemical processes.

Sense organs originally evolved for survival—for sensing around better habitat, food and predators from distance. Senses from surroundings arise as physical and chemical signals and are ultimately perceived by the neurosensory elements in the form of electrical stimulus. The sensory perception of a few cells on the integument of invertebrates gradually got transformed into our elaborate sensory organs through the process of evolution. Simultaneous refinement of brain could come up with synthesis of all the five senses and beyond, to end with six senses in higher forms of life. These six senses endowed the higher vertebrates especially man with perception for beauty and urge for aesthetics.

Besides evolution in organic world, evolution in the name of changing ever, occurs in the inorganic world too. That is why the undulating surface of the earth could come up with the Himalayas, oceans, Grand Canyon, mighty rivers and deserts. All these physical features of the earth are the baseline of panoramic beauties; the organic pastels are to add further. Thus, the process of evolution may also be described as the process to bring about the subjects of beauty and their perception.

Evolution is a slow process, much time is spent for shaping an object best suitable in reference to all different kinds of surrounding forces and factors. Of course the elemental things of the object is the matter to work upon by the forces and factors. Thus, we can find many different objects or species shaped differently in the same surroundings. Each object and species seem to be intricately designed and found very pleasing and thus nature is beautiful.

The forces and factors operative on biological matters or biological species are many and a student of biology can spend many years to grapple with them. The Darwinian tenet is basic for all this knowledge—*'survival of the fittest'*; the organisms, which possess proper hereditary endowments in a particular environment get a chance to prove their superiority in intra-species and inter-species competition, fighting the environmental hazards and survive to procreate the next generation with their hereditary elements. The hereditary elements are genes in the biological sense, and total genes are genome or hereditary endowment. There are sudden changes in the genes, known as *mutation,* cause change in the function of the gene and in consequences change in the characteristic of an organism. The new characteristic might help in better survival of the organism or might bring disaster; all depends on whether the new character gets selected by different natural forces and factors or not. This selection process is known as *natural selection.*

Natural selection can be explained as the process of acceptance of characteristics of organisms conducive for the living beings of a species at a particular point of time, in a particular environment.

The events of mutation and natural selection actually helped a male peacock to come up with unique colourful plumage or an elk or a deer with elaborate horns. These features again differ from peacock to peacock or deer to deer. The better ones chase out the weaker male and at the same time win the heart of the females of the same species. These acts allow the transfer of genetic materials for better characteristics from generation to generation. Thus natural selection does not select only the best features for survival of the species, it also is in a way responsible to bring in the beautiful creatures in this world. Before writing this article, it did not occur to the author that the natural selection in a way is the root-cause for the creation of beauties.

Everyone had glimpses of the sea floor or underwater creeks and crevices in rocks teeming with life in some television channels. So everyone experienced how wonderful beautiful plants and creatures could be as individuals and collectively, not to speak of the varied experience of wonderful sceneries and living organisms used to terrestrial way of life, sometimes at special corners of the earth. So earth is full of beauties as the end result of evolution and natural selection, providing the sense of aesthetics to human being and impetus to keep impression of beauties on his crafts covering all aspects of his life. A biologist's help is needed to satisfy the curiosity for some sessile beauties on the ocean floor or on a tree trunk whether do they belong to plant or animal kingdom (Plate III). Presenting even the salient beauties of nature framed in photographs in an article is an enormous task; only a request is being put here for everybody to go through some published books on taxonomical biology or be ready to glimpse them on a television screen. The great works of Mother Nature are to be appreciated all the time.

BEAUTY AT TWO LEVELS

It might be proposed that beauty can be at two levels—at macro and micro levels. A combination of beauties is likely to represent the macro level, such as a panoramic view, a forest or a mountain, whereas the individual beautiful components can be considered as micro level beauties. Although a tree or an animal represents such micro level in a panoramic scene, an individual is a combination of many beautiful sub-segments or microscopic beauties; in the situation an individual itself represents the macro level beauty. For example, a beautiful person may have beautiful parts of body. I think the poets and writers in Sanskrit literature were the best to describe even the minutest part of a beautiful lady or a handsome man. That is why we find the immaculate combination of beautiful parts in *Tilottama*. The creation of *Tilottama* was actually an act of embodiment of beauty components of different natural creatures to the wholeness of a human, more to reflect divinity in the nature's objects. Leonardo da Vinci, being an artist and man of mechanics could discover the beauty of human musculature as the basis of elegant movement. He depicted the beauty of human musculature in several of his immortal paintings.

TRULY MICROSCOPIC BEAUTY

Another level for beauty may also be assigned, truly microscopic; microscopes of different powers or resolutions are needed to reveal the beauty at this level. Some of the objects may be whole organisms, such as tiny *Diatoms,* cells, protozoans like *Paramecium, Euglena,* all different kinds of larva of invertebrates, etc. Tiny diatoms are the principal component of phytoplankton, the photosynthetic algal cells that float near the surface of inland and ocean waters and that are the primary source of food for all water-dwelling animals. Diatoms belong to phylum *Chrysophytes,* and are also known as "golden" algae, represented by some 10,000 species. Interestingly their cell wall does not contain cellulose as in other plants, rather have silicon intricately designed as shells. The designs of the covering shells are charming and object of beauty under a scanning electron microscope (Plate I). The intricate design varies with individual species. Imagine, 10,000 lovely patterns belong to a kind of microscopic organism.

An organ of our body is made up of several types of tissue, the cells in different tissues differentiate into distinct structural organizations to perform specialized functions. The cellular organization of a tissue under microscope reveals a unique pattern, thus multiple designs of several tissues are expected in an organ, altogether a particular architecture for an organ. Some of these patterns look quite intricate and aesthetically pleasing like woven designs of cloth (Plate II). I guess, soon these patterns will creep in handicrafts of man in different parts of the world.

The sub-cellular organelles like mitochondria, Golgi body, centrosome, ribosomes, cell membrane, each has a unique pattern of organization of macromolecules, which are discernible under transmission electron microscope. It is a great pleasure to view their magnified features.

MOLECULAR ORGANIZATION AT THE BASE OF BIOLOGICAL PATTERN

Thus, starting from sub-cellular to the organismic level or a higher at population level, beauties and great dazzling patterns exist throughout the living world.

Now, the obvious question will be what is the basis of the plethora of beauties in the living world. Does it depend on symmetry or something else? Of course a great symmetry is at the basis of organization of biological objects. To begin with, atoms and molecules are with great symmetry and are the main components of matter including living ones. Each of the molecules of living matter are basically made up of several inorganic molecules like carbon (C), oxygen (O), hydrogen (H), nitrogen (N) etc.; thus, they are bulkier and known as biological macromolecules. Each of them has wonderful precision, organization and lays the foundation of beautiful patters at sub-cellular and macro level of biological objects. A tree may apparently seem to have not much of precision in its organization. A close examination only reveals the unique organization of leaves, flowers or whorls of bracts, petals, stamens and stigma of a flower. In fact the uniqueness of this organization to a group of plants or animals allows them to be declared as a species. The animals in reference to the organization of their body are referred to as bilateral, radial, bi-radial, etc.

All these organizations are the result of natural selection and evolution as they have been discussed earlier.

The organization of an individual in its early embryonic life depends much on the beautiful streaming movement of cells. This systematic movement of cells is known as 'morphogenetic movement' which is a wonderful experience to budding biologists and can be a beautiful occurrence under microscope to any person. This movement for giving shape to a beautiful creature can be nothing short of beauty at the base of super beauty.

DEPENDENT BEAUTY

In the language of science, often an event is described as the synergistic effect of two heterogeneous elements when the two together increase the effect several folds than their additive value. The beauty possibly gets accentuated in a combinatorial background. Thus, sunrise at every morning becomes something beautiful to remember at Tiger Hill in the Himalayas, near to Darjeeling. The sun rises from behind the peaks at lower range through the gorgeously hued clouds pouring the molten gold at the tip of Kanchenjunga and Everest peaks at north. The tree belt and stray birds add further combinations to accentuate the beauty of sunrise at Tiger hill as almost unique in the world. The degree of beauty of the sunrise becomes several folds higher at Tiger hill with so many items around. Thus, the beauty can be described as dependent beauty at times, when the presence of other things are necessary for its full expression (Plate IV). A wild elephant, doing everything in its own right, rather than to the commands of man, is fearsome but extremely beautiful in the wilderness with multiples of tall trees and on knee deep grassland.

Apart from surroundings adding to beauty, there is the contribution of movement. Whatever moves catches the eye, and if the movement is rhythmic, it gives more delight to the spectator. It had been a convention among Sanskrit writers to compare gaits of women to creatures known for their wonderful movements. Sanskrit writers were keen observers of nature in her mysterious moods, and have spoken an orchestrated effect is achieved by harmonisation of several creatures, movements and rhythmic sounds in the landscape. A special mention should be made of the forests. They have been the cradles of our civilization. At one time the great forests like *Naimis, Khandav, Dandak* extended from one corner to the other of India. Again, the nature or biological objects enriched the treasure of beauties in the Indian literature.

REVELATION OF BEAUTY IN ALTERATIONS

Basically the human mind is fleeting. It suffers from boredom or monotony on concentrating too long on a subject even a subject of beauty. This fleeting nature of mind of course allows man to be constantly in pursuit of beauty. So a poet writes many poems on love or an object of beauty. Man finds much pleasure in the wilderness of a forest and when tired feels like creating a garden based on geometric layouts full of plants of choice. After a while he feels tired of his beautiful garden to find much pleasure in wilderness without any apparent geometry or regularity of plant species. The dissatisfaction of human nature seems to generate urge for creation with different shades. And creation is based on the human nature of realization of the beauty.

IS MAN THE ONLY SPECIES TO REALIZE BEAUTY

A biologist's world is full of plants and animals, and man is only one of them. So he always wants to include the other creatures in his discussion of a topic, and I feel the same even for a topic on beauty. The question of realization for beauty in plant world apparently does not arise as they are devoid of any organized sense organs like animals. But the beautiful flowers, ripened colours of fruits come to existence through the process of natural selection and evolution to attract the animals in search of food like nectar, pollen and fruits, in the course, pollination and dispersal of seeds are done.

Now an automatic question will arise, do the animals other than man have a sense of beauty. Otherwise, how they could be attracted to the flowers and ripened coloured fruits or a weaver bird could build the wonderful nest to attract its female. A not too deep and usual answer is that the animals are driven by instinct. But definitely the instincts are driven in turn by sense organs and similar neural stimulation as for realization in man. Our easy answer for animal sense is comparable to the disdain the westerns have about the economically weaker nations. In reality, the perception of beauty, if any, in animal world must be based on the similar neural mechanisms as in man. Why a female bird with considerable volume of brain to its body weight, would fail to recognize the crafts in nest building of its counterpart, or a lioness would fail to appreciate the ruffled manes of a lion with great musculature chasing away another weaker male.

One may argue that instead of realization of beauty the role of sex hormone plays the dominant role in the attraction of a male or a female of an animal species towards its opposite sex. This can be admitted for argument's sake on the ground that if animals really can perceive beauties then that should be across the species boundary as in the case of human. Man does not find the ethereal beauty only in woman, he can do so in other species or even with inanimate objects. Adherence of this human quality to animal world is a difficult task at present. This may be deciphered only when experimental biologist will learn to read the spikes and valley of electroencephalogram of brains of man and animals after seeing a beauty across the species boundary.

The role model of sex hormone in seeking beauty to fall in love and procreate within a species is an ever agreed point across the animal world.

Another point follows this discussion—how much role is played by the sense of love in the realization of beauty. Much can be discussed on this sub topic with more of feelings than of substance, and the discussion will vary with person to person. Not to increase the length of this article I like to leave the discussion to the poets. The role of love, I think, is beyond the scope of the scientists and even philosophers. This sub topic might be mentioned under dependent beauty. Love is more of a feeling than material, it may add quality to beauty; beauty sometimes may generate sense of love.

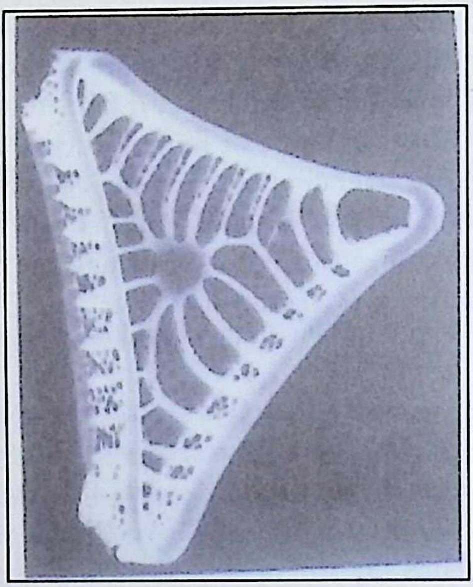
AESTHETICS—THE PHILOSOPHY OF ART AND BEAUTY

The sense of aesthetics may be a virtue of human species only. Not necessarily all human beings are endowed with this quality. It has basis on realization of beauty and urge for immortalizing it. When men are to some extent free from the natural cycle of prey upon and to be preyed, in other words 'eat or get eaten', they develop the urge for creation. Usually beauty inspires for aesthetics and creation. Cave-man in his wall paintings left the undeniable mark of his appreciation for natural beauties. Aesthetics in a way thwart the fleeting sense of appreciation for beauty in some sort of forms for others to appreciate. Thus, aesthetics becomes a silent medium of exchange between creator and others.

Aesthetics is in every mode of human expression—arts and crafts, painting, music, dancing, mime, singing, writing, even I think science at times. All these expressions are usually inspired by the experience of beauty, and at times urge to seek beauty. Science definitely depends on our urge to seek truth, which may be described as beauty. Thus, beauty and truth, "*satyam*", may be related in human philosophy of aesthetics.

Mind is the relay centre for the appreciation of beauty to urge for aesthetics. In the process mind does not always replicate the reality, rather often the bubbling sense of beauty gets transformed to some surrealistic expressions. It seems that mythologies in different cultures are the aesthetic expression of realization of beauty in human life with its virtuous peaks and hollow bogs. Mythology is the expression for totalness of life process, which one may not experience in one lifetime. Mythology is vivid, surrealism is only in its expectation of the best, equivalent to utmost beauty.

In the end, I like to add that it is quite an experience for me to write this article as a man of science. It helped me to systematize some deep and stray thoughts of mine, which I wanted to share with others. Men of science often remain segregated from others with a more philosophical bent of mind. I am indebted to the Editor of this issue of *Sandhān* for providing me the opportunity to cross the boundary of segregation.



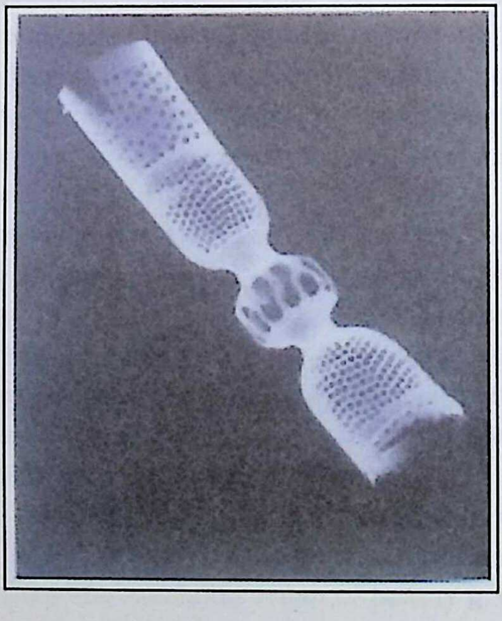


Plate I. Truly Microscopic Beauty: Intricately and Varied designed silicon shells of tiny *Diatoms* ('golden algae') as shown by the scanning electron microscope. (One micron is one thousandth part of a millimeter, the length of a diatom is about 120 microns)

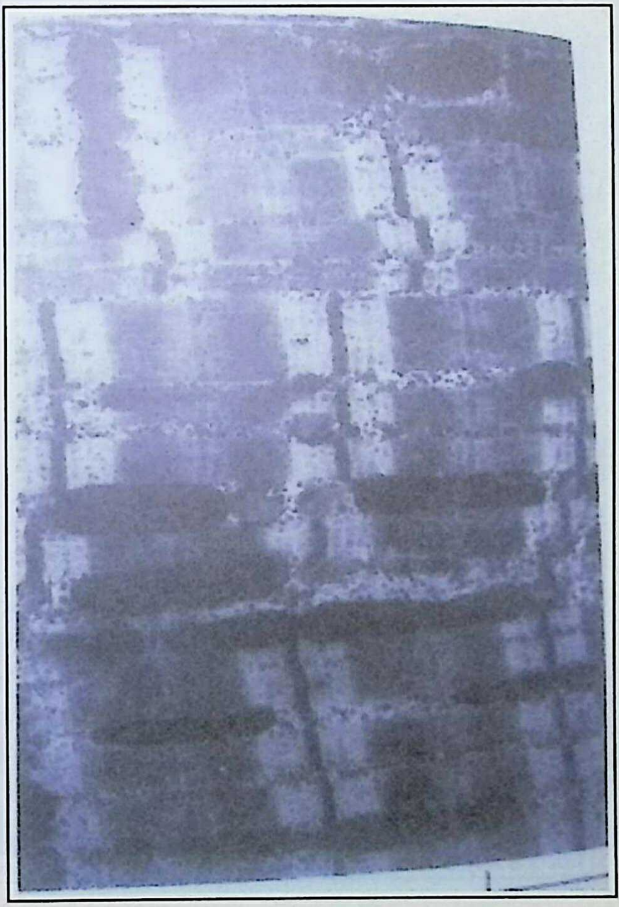


Plate II. Low power transmission electron microphotograph of heart muscle is another example of micro-level or microscopic beauty, looks more like woven design.

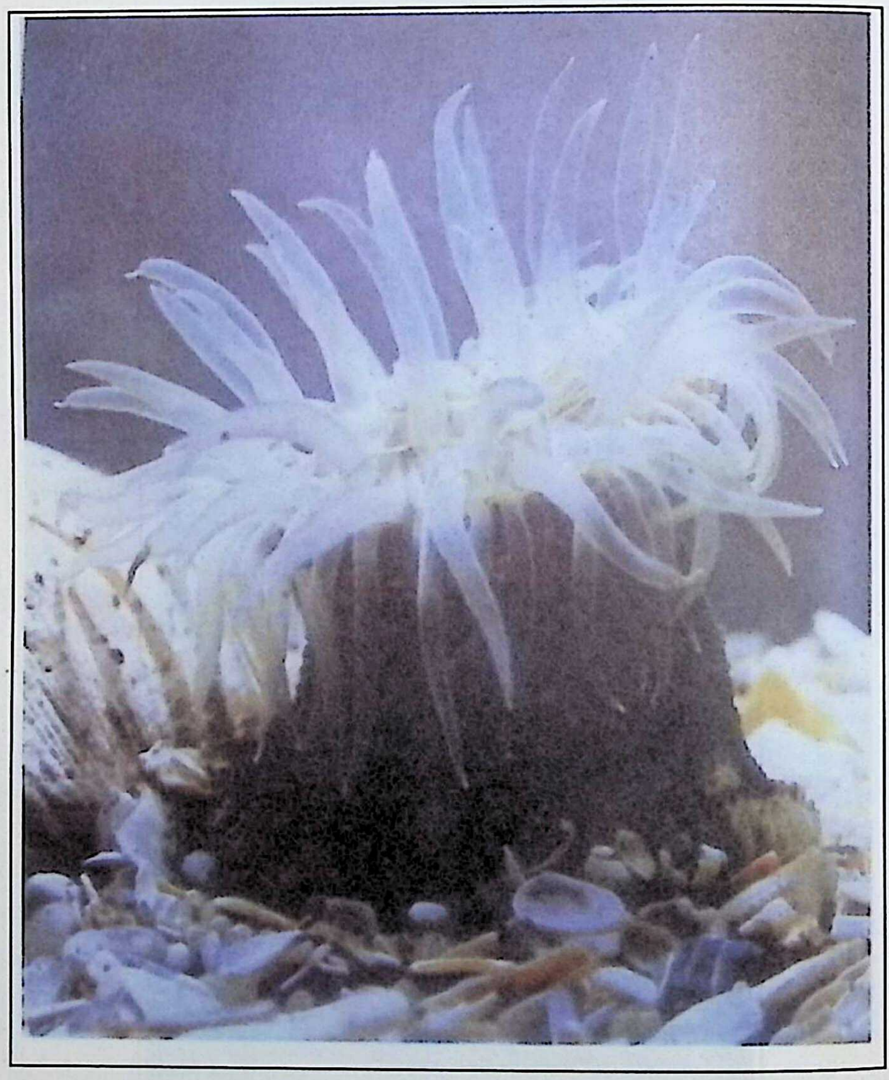


PLATE III. A sea anemone at the inter-tidal zone of sea, often described as the sea flower. The flowerlike appearance is deceptive; anemones are carnivorous animals in an invertebrate phylum Cnidaria to which *Hydra* belongs.

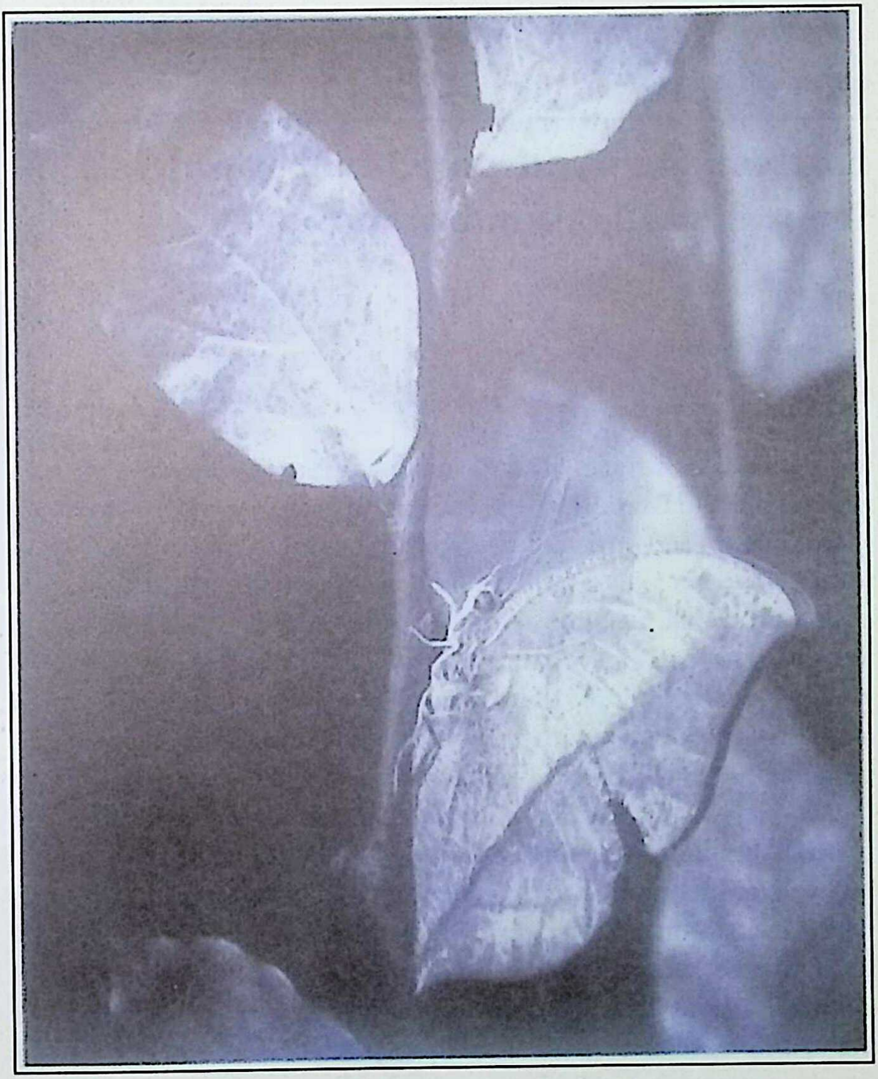


PLATE IV. *Kallima*, the Indian leaf butterfly resembles more of a leaf for survival from its predators; an example of natural selection for mimicry.

[*Acknowledgements for the plate sources:* Plate I to III—Curtis, H., *Biology*, 2nd ed., Worth Publishers, Inc., New York, 1975. Plate IV—Simpson, G.G., C.S. Pittendrigh and L.H. Tiffany, Life: An Introduction in Biology, Harcourt, Brace and Co., New York, 1957.]

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Aparna Banerjee

Can Justice and Equity be Accommodated within the Caste System?

The *Puruṣa Sukta* of the Veda is ordinarily taken as a basic text of the caste system as found and practised in India. This famous text of the Veda seems to be a gigantic metaphor which is open to many interpretations, conservative as well as liberal. Like every metaphor it has in it both a liberal basis and a conceptual extrapolation seemingly supported by that basis. Similar views are found in the Epics, *Purāṇas* and *Dharmaśāstras* written or codified over a very long period and which suggests that this vocation-based social stratification and division of labour has been in vogue in changing forms for more than three millennia.

It seems that an attempt should be made to examine the Hindu caste system in relation to some indigenous notions of Equality and Justice, rather than contrasting hierarchy and egalitarianism which is a more popular practice, especially in the Eurocentric studies of the caste system. However, I do not think that cultural incommensurability is an inevitable fallout. This is firstly because cultures are open-ended and secondly, because a fusion of horizons is an interesting possibility that can make us, in this case, acquainted with alternative concepts of Equality and Justice. The Organismic metaphor that is involved in almost any discussion of the Caste system, needs to be examined both regarding the nature of the metaphor and its evaluative undertone. How far, this metaphor can accommodate the idea of 'equal access to opportunity' is a very debatable issue. It seems that some serious ethical issues arise here. The question is not simply whether one should accept the caste system. We should rather ask whether the theories of Justice and Equality underlying it are acceptable and if acceptable whether they are practically applicable.

I

THE PLACE OF JUSTICE AND EQUALITY WITHIN THE CASTE SYSTEM

Any given culture is made up of the various ideas and values that provide the people with general principles of action and legitimize their beliefs. The institutional patterns of a society exhibit, on the one hand, uniform processes of behaviour of the individuals in a society. On the other hand, they have a virtual objectivity that goes beyond the life of the particular individuals. In fact these are felt and followed by the actors as stable and obligatory and not amenable to easy change. Even if there are a few non-conformists who cease to have faith in the given institutions and favour social reforms, they also realize how hard it is to change them. These institutions determine not only our relations with one another but also our relative positions and roles in a society. Thus while the position of a teacher, an administrator or that of a merchant, for example, may be outwardly recognized more or less similarly in different societies their *de facto* roles are not ordinarily accorded the same status and value. The theoretical formulations of the social sciences of the colonized countries are historically found to be Eurocentric, at least in their early phase and, therefore, the non-western cultures have been described only with reference to Europe. But now that different trends are at work in the field of culture, the views found in the social sciences have also been undergoing major changes; especially a genuinely new approach to thinking about values is surfacing in the form of pluralism. Yet, at the same time, in today's world a trend of globalizing tendencies in the political, economic, cultural and technological spheres is becoming strong. This cultural globalization is much stronger and pervasive than the hegemonizing tendencies of the colonialists of the past. It has a tendency of wiping out local cultural identities. Moreover with increasing cultural mobility due to globalization a person is able to occupy various cultural identities at the same time. The struggle for one's cultural purity is therefore, no longer with some outside enemy, but often with a part of one's own self.

It is within such a context that the significance of the pluralist thesis about values becomes clear and relevant. The pluralist acknowledges that there may be many values sometimes commensurable (and sometimes perhaps even incommensurable), each of whose realization is called for living a good life in some society or other. However, these values are often related in such a manner that the acceptance of one excludes the acceptance of the other. When the caste-based hierarchical Hindu society is criticized as being based on inequality such a complete opposition of values is often presupposed.

It is however, not claimed that any externalistic understanding of a social institution is mistaken. That would lead to the conclusion that an objective understanding is impossible in the social sciences. But combined with an optimism about an objective study of social institutions, the social scientist should aim to develop open-mindedness and level of imagination, along with sincerity. Perhaps this is what Gadamer meant when he claimed that understanding requires 'taste, tact and judgment'. The Hindu caste system is the outcome of the institutional/relational peculiarities of Hindu culture. Yet social scientists have sometimes read into it their own norms and evaluations. In any discussion of the Hindu caste system, the name of Louis Dumont, the author of *Homo Hierarchicus*, still plays a major role. He had cautioned the western academic world to lay aside their own ethnocentric intellectual categories in order to do justice to the ways of thinking of another civilization like India. Dumont had rightly noted that the world-view of the Hindus is mainly hierarchical. He has, however, been accused of dismissing certain relevant facts about caste. For example, his view was that the idea of hierarchy in the caste system separates status and power and it has created a lot of doubt and speculation. He has been accused of dexterously marginalizing the existence of some evidences to the contrary. As a sociologist he was expected to explain and systematize the existence of such social facts.

Since our focus of interest is mainly on social philosophy underlying the social practices, we are here primarily interested in the theoretical concepts that he has used. However, it should not in any way be presumed that philosophizing could proceed cutting it off from social realities. The institutions and norms that are sanctioned and justified by the Hindu religious, ethical and social philosophical texts seem to take hierarchy as the appropriate model for understanding Hindu society. If we look at the Vedic, *Purāṇic* and the *Dharmaśāstra* literature (even keeping in mind their various interpretations), we find social hierarchy to be a very central idea. Now, while it may be conceded by the western sociologist that discrimination between human beings on the basis of merit or worth is found to some extent in all societies, some societies like India have built them in all their major institutional and social norms. But as Dumont argued, while interpreting the Indian culture in this way the western thinkers should be cautious of the traps of ethnocentrism. They should free themselves from preconceived ideas like individualism and egalitarianism and try to understand the Hindu society in its own terms. Also they may profitably recall the distinction between (i) the patrician and plebian in the Roman society, (ii) of citizen and non-citizen in the ancient Greek city-states and (iii) of Lord and serf in the medieval Europe. The institution of *Varṇa* divides society into four orders in a hierarchy—the *Brāhmaṇ* (priest), the *Kṣatriya* (warrior/ administrator), *Vaiśya* (traders and farmers) and *Śūdra* (workers). He says that the westernized modern society with its concern with individualism is obsessed with the equality of status, while the traditional society of India had the quite different concern of maintaining itself. But, here one may raise the question whether Dumont's reading of the Indian society as non-egalitarian was itself not biased? We may also ask whether any hierarchical society need necessarily be non-egalitarian? For just as it is very difficult to think of a culture that has no room for the idea of justice the same holds true about the idea of equality. These seem to be basic human values. We should also keep in mind the phenomenon of cultural assimilation that has occurred in India through the ages. It therefore, seems more plausible that the concept of equality will have some place in the system. But the meaning of the concept should be traced to the culture itself. If instead we impose our currently accepted norm of equality and then judge the culture in question in terms of it, it may appear to be lacking the norm altogether. Despite his sensitive approach and awareness of the problem of understanding a different culture it seems that Dumont himself may have committed the mistake of ethnocentrism. Once again, the difficulty of understanding an alien culture is admitted. It is almost like trying to get under the skin of the 'other'. But unlike the latter enterprise, understanding a different culture is not impossible. There is enough similarity in the human nature to provide a common ground for understanding. Acceptability, however, is a different matter.

II

JĀTI, VARṆA AND THEIR RAMIFICATIONS

The primary difficulty that one faces when studying the caste system is regarding the meaning of the word 'caste'. One may take the word to mean the ideal system as we find in the scriptures. On the other hand it may mean actual social stratifications that have manifested themselves historically in India. Thus a distinction is sometimes drawn between these two concepts in the following way. The Hindu theoretical picture of human difference based on nature is called *Varṇa* while caste represents the actual and historical social conditions in India and sometimes even outside India. A closely related word is '*jāti*' which is sometimes used in the sense of *Varṇa* but more usually in the sense of caste.

In the *Viṣṇu-Purāṇa* we find emphasis on character or quality over birth in the explanation of the creation of the four *Varṇas*. Here unlike in the *Puruṣa Sūkta* (which is usually quoted to explain the division of *Varṇas*) instead of the notion of the cutting up of the original Being, we have the notion of issuing according to one's nature. In the *Viṣṇu-Purāṇa* we find that when *Brahmā*, the creator became desirous to create the world, creatures in whom Harmony and goodness (*sattva*) prevailed sprang from his mouth; others in whom passion (*rajas*) pre-dominated came from his breast; still others in whom both passion and ignorance (*tamas*) were strong proceeded from his thighs. The rest he created from his feet. Their chief characteristic was ignorant darkness. This constituted the system of the four *Varṇas—Brāhmans, Kṣatriyas, Vaiśyas* and *Śūdras.*

Now, since this is a metaphor, it is interesting to ask as to how far it is descriptive and also how far it is prescriptive. Moreover is there not the suggestion of an evaluative reading too with the Brahmanical qualities as the most admirable? This last question is very interesting indeed. It is a general human tendency to appreciate the so-called *sattva* and *rajas* qualities more. Yet, society stands primarily on services rendered to others, that is supposed to emanate from *tamas.* Is it because the first two are more difficult qualities to acquire that they end up dividing human beings into higher and lower? What is even more intriguing is that due to this inevitable evaluative streak in human nature, people who have 'admirable' qualities in them are emulated for their even not so admirable but easily acquirable qualities. This adds to the complexities of the situation. Perhaps the process of 'Sanskritization' in India has some relation to these traits of human nature apart from other reasons.

But to come back to the Hindu Purānic texts and their emphasis on character in determining one's *Varṇa*, we may refer to the *Mahābhārata* which is both largely read and has great popular appeal. Here we find "A man whether he be a *Brāhmaṇ, Kṣatriya, Vaiśya* and *Śūdra* is such by nature. By evil deed a twice born man falls from his position The *Kṣatriya* or *Vaiśya* who lives in the condition of a *Brāhmaṇ*, by practising the duties of one, attains to *Brāhmanhood...*"[1]. About the *Śūdra* it is said that by practising certain good works, a *Śūdra* becomes a *Brāhmaṇ.* In the

Bhāgavad-Gītā which is the most popular religious text of the Hindus, the duties of the different *Varṇas* are described to be according to the qualities born of their own natures.

BrāhmaṇaKṣatriyaviśāṁ
Sūdrāṇāṁ ca paraṁtapa
Karmāṇi pravibhaktāṇi
Svabhāvaprabhavair guṇaih[2]

Each individual has his own inborn nature or *svabhāva.* It is his duty or *svadharma* to make it effective in his life. There are four broad types of human nature and accordingly there are four different kinds of social lives. But these different kinds are determined not by birth but by one's nature.

Here a question may be raised. If difference in *svadharma* is to be determined by *svabhāva* or difference in human natural tendencies, should there not be scope for mobility in so far as *Samāj-Dharma* or social norms are concerned? Moreover, while difference in *Svabhāva* is admitted in terms of the primacy of a *guṇa,* it is at the same time admitted that all individuals have all the three *guṇas*—two of which lie dormant. Does the caste system leave room at least for equal access to opportunity even if the notion of equal opportunity is inconsistent with it? The answer does not seem to be very clear. Is ever a very brilliant *Śūdra* eligible to listen to the Vedic-texts? One can refer to the rule in Gautama's *Dharmaśāstra* which states that a *Śūdra* who listens to Vedic texts should have his ears filled with molten tin or varnish. On the other hand in the *Chāndyogya Upaniṣad* we find the story of *Satyakāma Jābāli,* who in spite of his ignorance of his paternal lineage is classified by his teacher as a Brahman, because of his honesty to admit it in a society that is based on genealogy. This seems to be an example of non-hereditary ethical *Samājdharma* that allows for access to opportunity to people who are worthy of it. The problem is that the historical evidences of the hereditary caste system too are enormous. Here, of course, one can always point out that such phenomena have their roots elsewhere—not in the *Samājdharma* that was initially advocated in the *Śāstras*. Historians, with pro-Marxist leanings like R.S. Sharma[3] hold that because pre-iron agriculture of low productivity persisted for a long time in India, ritualism and the *varṇa* system became rigid. Similar arguments have been offered by others.[4] But whether these are clinching arguments showing the seeds of a static caste system as not already present from the beginning of the Vedic Age is another question. The *Bhāgavad-Gītā* which is the most popular religious text of the Hindus apparently takes the duties of a person to be determined by his/her nature (*Svabhāva*) and station (*Svadharma*) as we have already noted. Thus we find elaborate distinctions between three kinds of doers, three kinds of understandings, three forms of steadiness and even three forms of happiness. All these distinctions are drawn on the basis of the primacy of one of the three *guṇas* in a person—*sattva, rajas* or *tamas*. Now along with *guṇa* there is another concept in terms of which the *Varṇa* system is explained in the *Gītā*, which is *Karman* which we may broadly translate as work. Commenting on the *Varṇa* system Radhakrishnan observes "It is not a question of identical opportunities for all men to rise to the highest station in social life, for men differ in their powers, but a question of giving equal opportunities for all so that they may bring their respective gifts to fruition. Each one should have the opportunity of achieving his human fullness, the fruits of wisdom and virtue, according to his effort and condition."[5] However, we also find completely opposite interpretations. While it is true that categorical statements of hereditary interpretations are not to be found in the *Gītā*, one may argue that such an interpretation remains unquestioned in it. In fact, the mixing of castes (*Varṇasaṁkara*) is referred to as a threat to society.[6] The question thus remains whether the *Varṇa* system as advocated in the *Gītā* is purely ethical or hereditary or both? Of all the arguments that may be advanced in favour of the hereditary theory of castes, there is one that is especially strong. It may be argued that a child born out of marriage between two persons having predominant sattva *guṇa* will have a greater chance of being of the same *guṇa* predominantly. Yet, since a person has all three qualities, there will be a chance that the child born will be either *rājasik* or *tamasik*. In such a case, such a person will not remain a *Brāhmaṇ* for long since ultimately he will fail to live up to the austere ideal lifestyle of a *Brāhmaṇ*. Similarly the opposite will also hold true. There is the famous story of *Viśwāmitra* turning into a *Brāhmaṇ* through steadfastly following the difficult duties of a *Brāhmaṇ* and manifesting their character traits. But there will be and have been exceptions. The influence of hereditary is such that in most cases such exceptions will not happen. This seems to be the only way of showing that the hereditary *Varṇa* system is minimalistically unjust.

III

KARMA, DHARMA AND THE RELATED IDEAS

At this point another principle needs to be taken into account. And that is the Law of *Karma* and its various implications. According to most of the Hindus, this life by itself is not self-contained and does not seem to have any complete meaning. It may be deemed to have a meaning only as a link in a long chain of births and deaths, spanning both the past and the future. This chain comes to its end when the concerned person or self attains liberation or *Mokṣa*. Every birth for the human being is an opportunity for him/her to progress towards liberation attaining progressively more and more freedom. It is by following the path of *Dharma* that one can approach that Supreme Goal.

The whole material universe in which the individual is placed and obliged to work is not antithetical in character to his moral aim and spiritual goal. One must not think that the material world believed to be under the law of causation is a road-block for the individual in his journey to moral progress and ultimately to spiritual emancipation. Rightly understood this view tries to reconcile empirical or scientific view of the world with the religious and spiritual quest of life. Hidden assumption underlying this Hindu view is that the individual must refrain from doing anything contrary to the laws of Nature. In this context Nature is to be taken in a comprehensive sense, comprising both the physical nature and the moral universe. The key to the compatibility between the laws of physical nature and those of moral nature is available within every person's *svabhāva.*

This view of *svabhāva* is a bridging concept, linking the aim of the individual with the ideal goal of the collective life. Collective life itself is not an undifferentiated unitary whole. Within our collective social existence there are limited, but not permanently fixed, bounds of different traits, dispositions, capacities and actions. Caste is to be taken as a bridging concept of a group of individuals united by their skill, orientation and action. Within the social bounds of caste everybody has his/her responsibility by discharging which the concerned person may go upward and the inability to discharge the responsibility entails social and moral degradation. This construction of the relation of the individual and caste does not restrict individual's *svabhāva-dharma.* Rather it facilitates the concordance between *svabhāva-dharma* and *samāja-dharma.*

This view of caste, under a rational and warranted interpretation, does not *mechanically* ensure equality between individuals or different castes. By implication what is suggested is this. Human beings, neither in their individual capacity (*svabhāva*) nor in their aggregative or caste-affiliated identity (*samāja*) are uniformly similar. To put the matter from the other end, the implied *difference* between individual and individual, group and group does not mean intrinsic *discrimination.* Only when difference is permanently fixed or defined in terms of denial of certain opportunities which are necessary for individual's social development and moral progress, it may be criticized as discriminatory. Neither majoritism nor minoritism by itself is vitiated by discrimination. The majority may be wrong and the minority may be right. But, within a liberal democracy and given the rule of law, the views of majority deserve serious consideration and higher weightage. However, this does not mean that the views and values of the minority should be underrated as a matter of rule. On the contrary, all things being equal, their social and economical disadvantages merit very sympathetic and just consideration. The doctrine of multi-culturalism is intended to highlight this point of view, the view under which minorities and weaker sections are provided with special provisions of safety and security.

A very influential interpretation of the Hindu view of castes draws an important line of distinction between the concept of *liberty* and that of liberation. Liberty is an episodic socio-political space for the individual mainly with reference to his psychosomatic personality or socially affiliated animal existence, but liberation is dispositional, a propensity inherent in the human nature (*svabhāva*) which cannot be realized instantly or within the lifetime of the human being. The subject of liberation is the *self* within the human being and presupposes no dichotomy between the social and empirical self on the one hand, and the inner self on the other. These two selves are not entirely different. They are intimately related. By inwardising our consciousness, through meditation and contemplation, by making ethical use of reason, the empirical self can easily get into the depth of his own spiritual self. In fact most of us commute between these two levels of existence. Our freedom, inalienable freedom, enables us to move from the lower self to the higher self, from the higher self to the lower self, from altruism to egoism, and from egoism to altruism. Our lived life is marked by various aims (*purusārthas*), spiritual (*dharmā*), pursuit of economic value and meaningfulness (*artha*) and psychosomatic yearnings (*kāma*) and beyond these three aims (three *vargas*) and as the culmination of the same lies *mokṣa* or the highest stage of freedom.

Close analysis of these aims of life makes it clear that caste-bound social order leaves room for economic competition, pursuit of higher aims not necessarily tied down by exclusivity of economic goals, rejection of bodily pleasures leading to asceticism. Constructively speaking, the Hindu social order based on caste, is not narrow in its scope and does not deny upward and downward social mobility. It attaches great value to the quality of human action. Heredity is only the initial social position assigning a particular place to the individual in the society. His/her ultimate aim will be determined by the qualities of *karma.* On the *karma*-related *dharma* creative importance is attached.

In this connection we may recall an interesting story to be found in the *Mahābhārata.* This story relates to a dialogue between the Dutiful Hunter (*Dharma Vyādha*) and the *Brāhman.* The latter, a man believed to be of the highest caste, had gone to the *Dharma Vyādha,* a man of the lowest caste to take the instructions about the ways of *Dharma,* because despite the former's so-called low birth, he was scrupulously observing his duties and therefore deserved respect of the concerned *Brāhmaṇ.* The hunter explains how it is not possible to live without doing any *karma* which is *dharma*-related. Even the commandment of *ahimsā,* i.e., not to kill, is difficult to be followed literally. Living itself involves killing some forms of life. Hence it is said that the best way of performing *dharma* is to follow the dictates of one's own nature (*svabhava*) because there lies the spring of all good actions (*śuklakarma*). For example, killing is not contrary to the dharma of the hunter. This story though gives us a very important aspect of moral life, it need not be taken in a very narrow sense because both in the epics, the *Dharmasāstras* and *Purāṇas* we come across other types of stories in which we find even a warrior like Viswāmitra, for example, by his spiritual attainments is declared to be entitled not only to be a *Brāhmana* but also to perform the actions ordinarily assigned to the *Brāhmaṇ* community. This paradigmatic maxim may be safely extended to the persons belonging to other castes.

IV

JUSTICE, EQUITY AND CASTE SYSTEM

Stratification, difference in position, division of labour, grading, rating, ranking, protocol-bound precedence, calibrating merits and apportionment of responsibility are among the characteristics of the society primarily determined by the caste system or its surrogate. Careful analysis of the said characteristics show that some of them are purely sociological, i.e., almost value-neutral in their implication, whereas other characteristics are essentially axiological, i.e., value-loaded. Within every society which recognized division of labour evaluative characterization of different groups is unavoidable. But the attempt to draw a sharp line of distinction between sociological description and axiological evaluation is extremely difficult, if not impossible.

For example, while the *Brāhmaṇs* are ordinarily characterized as *varṇaśreṣtha* and supposed to be concerned primarily with the pursuit of knowledge and imparting the same to others, it is not the case that they have no added responsibility in a war-like situation. In any complex and/or extraordinary situation, the duties and responsibilities of the people belonging to any *varṇa* cannot be claimed to be strictly exclusive and defined narrowly. While the king and the warrior classes are under the primary obligation of defending the country against its enemies, both internal and external, the *Brāhmaṇs* are concurrently under the obligation of advising them properly so that the former may perform their duties in the most efficient manner. An element of organicism informs every social order and makes its identity differentially unified.

For example, the Mandarins of China and the *Kṣatriyas* of India, together with their specific administrative and military duties, are expected to learn the *modus operandi* of doing the same under the advice of the religious teachers. It is to be added here that even within every *varṇa* or *jāti* there are internal teachers, persons possessing higher forms of knowledge specific to that particular group. For the *Kṣatriyas* in the ancient India the study of *dhanurveda* (the science of archery) was a compulsory study. *Droṇācārya* of the epic fame mastered the science of archery and could do so without himself being a *Brāhmaṇ*. It is interesting to recall that *dhanurveda*, like *āyurveda*, was accorded the dignity of being recognised as a Veda. In the later history of the Indian society the practitioners of *āyurveda* came from non-*Brāhmaṇ* castes. But the contents of the *āyurveda* have a lot of philosophical elements in it and the mastery of which demanded philosophical knowledge specific to the *Brāhmaṇs*. In the realm of practicing a theory the qualities expected of the theoretician and the practitioner are bound to be overlapping, at least to a certain extent. This point explains, at least in part, why inter-caste mobility was possible and often commended as desirable too.

This point may be illustrated by what was expected of a successful businessman. He was required to master not only the science of commerce (*vārttā śāstra*) but also to have some familiarity with navigation and astronomy (*jyotiṣa*). Business often demanded high sea or coastal shipping. It was difficult for the navigator to recognize the stars and stellar constellations and take their boats towards the right direction.

Jāti-related duties could not be discharged in their exclusivity or in isolation. Social complexity, i.e., interface and interactions of the caste-bound groups, had their resonance in the fields of knowledge and skills which were found to be more or less interwoven and rightly textured. Besides the epistemological aspect of interaction between the peoples belonging to different caste groups, there is a kindred area of study stating how the performance of caste-related duties tends to foster more or less definite political and ideological attitudes, e.g., conservatism for the land-bound peasantry and mobility for the duty-bound warrior class.

Dharma or ethics is not necessarily intended to be strictly universal as Kant thinks. In many, if not most, cases ethics is group-specific, profession-specific, class-specific or, as in this Indian context, caste-specific. It is well known that some thinkers, in most cases metaphysicians or philosophers of religion, have tried to formulate *theoretically* how best to reconcile group ethics and specific forms of personal ethics into a coherent globalized manner. In order to be ethics in the true sense every choice, be it specific or global, needs to be agreed upon by *all* concerned. But actually, i.e., in practice, it is invariably found that every group and even every individual within a group has its and/or his own value schedule. What is more problematic is this: it is not easy to reconcile (i) social choice, (ii) individual values, and (iii) societal priorities and individual priorities. This ethics of choice is easy to formulate at a very high theoretical level. Many writers on ethics and economics like Amartya Sen and Kenneth J. Arrow have dealt with these issues in their various facets.

But when this issue is sought to be applied in practice, it is found, various problems, particularly the problems arising out of difference in social choice and the difference in individual values, appear to be incongruent, if not, irreconcilable. This is evident from various problems experienced in forming an *effective* World State, or even a relatively loose Federation of the Nations of the World. In this connection one can instructively recall the failure of the experiment of forming the League of Nations after the First World War.

This problem, in principle, reminds one why within one social system marked by many castes, classes and similar other group interests cannot be easily reconciled. Seriousness of any ethical issue need not be construed as absolutely intractable. Strictly speaking, in all spheres of life we are used to live with the gap between common goal and conflicting interests. If this modern insight, just referred to above, is brought to bear upon the problem of accommodating justice and equity in a caste-ridden society like India, our understanding of the whole matter and the related issues are likely to be clear and more promising.

The very notion of equity, for example, is modest in its aim. Unlike the ideal of equality, this ideal does recognize the difference in group interest or, as in our case, caste interests. If we forget for the time being the added complexity of taking sub-castes into account, we will realize that the societal difference does not make co-existence impossible. The very fact that the Hindu society is surviving for many millennia having some form or other of caste system within it shows that this system as such must not be taken as an incurable evil. Within every other civilized society or religion we always find different sects, orders and groups. For example, within the folds of all major religions like Confucianism, Judaism, Christianity and Islam, we have been consistently watching the gradual emergence of different sects and sub-sects, and different schools and sub-schools of thought. Yet, it is instructive to note that the common identity of these religious denominations have survived millennia. The aim of unity and the instinct of difference are almost native to the human nature in itself. History and social settings modify the same in various ways. In the context of caste system of the Hindu social order, the same issue reappears. This recurrently reappearing issue needs to be studied both historically and sociologically, trying to bear upon them the influential views of the modern time.

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SYMPOSIUM

Vikram Singh Sirola

Why Science Alone Cannot Unravel the Mystery of Consciousness: A Wittgensteinian Perspective

> **Only a living human being and what resembles (behaves like) a living human being, can one say: it has sensations; it sees; is blind; hears; is deaf; is conscious or unconscious.**
>
> **– Ludwig Wittgenstein, *Philosophical Investigations*, # 281**

INTRODUCTION

Traditionally, consciousness has been thought to be a central aspect of our mental life. In the seventeenth century, Descartes introduced a new concept of consciousness and with it a different way of thinking about human being or human soul as such. This conception was different from the Aristotelian way of thinking, as Cartesian picture appears severely circumscribed. He distinguishes the soul as consciousness or 'thinking subject' from the wider Aristotelian conception of soul as principle of life, which included all living and bodily functions, thought, imagination, sensation, nutrition, growth etc. Descartes asks: "what then am I? A thinking thing, one that doubts, understands, asserts, denies, is willing, is unwilling, which imagines and feels".[1] In conscious experience, he has drawn a boundary around something essential about humanity. Later, Locke also regarded consciousness as "the perception of what goes on in one's own mind." For him, thought without consciousness is unintelligible. Nothing could conceivably go through a mind unperceived: "it is altogether as intelligible to say that a body is extended without parts, as that anything thinks without being conscious of it, or perceiving that it does so."[2]

By early twentieth century, this traditional understanding of the nature of consciousness and it's association with the mind has come under severe attack from many quarters. Much of the content of the Cartesian mind—the psychological aspect of doubting, understanding, assertion, denial, willing, and perceiving—had become the subject of scientific investigation, particularly psychology. Cognitive scientists, behaviourists, and psychoanalysts in general have rejected the traditional view that consciousness is the central aspect of our mental life. Though they find consciousness interesting, yet they also suggest that consciousness is inessential for most of the mental states and processes. This combination of attitudes seems to be overtaking discussions about consciousness in recent philosophy of mind.[3] This is a result of the growing wave of enthusiasm for scientific research into consciousness. Many scientists now aim to penetrate into the mysteries of consciousness and identify the material or the physical mechanisms that underlie conscious experience. Hence the question arose: is it possible to give a complete account of man in pure physico-chemical terms that is, purely in the language of the natural sciences? In other words, is it the case that consciousness be comprehended only within the province of science?

Any attempt to answer this question has to take into consideration "the emergence of a host of new techniques specially in the last couple of decades".[4] It has enabled science to claim that "all the aspects of mind, including its most puzzling attribute—consciousness—are likely to be explainable in a more materialistic way as the behaviour of large sets of interacting neurons."[5] So are the recent philosophers of mind like Daniel Dennett, John Searl, Ned Block etc. who have accredited science with the faculty of unravelling the mystery of consciousness.

Against this background, this paper is an attempt to look at the problem of consciousness from Wittgenstein's perspective, which is a critique of physicalist's argument of limiting consciousness to only material level. The basic objection posed against any form of physicalism is that while these scientific studies can reveal us many exciting things about human consciousness, but no physicalist theory would be able to pinpoint any specific material property that constitutes the quality of being 'conscious'. No detailed account of material property could tell us how it is being in pain or seeing something red etc. Even if we give an ideally complete physical description of a living human being—Whether on the levels of explicit behaviour, of neurophysiology, or abstract functional organization—we would still have something left out. The physical description will not include the person's subjective conscious experience i.e. what it was like to be that person. It doesn't even logically imply from it.

Here, this lacuna in physicalist's notion of consciousness is not being pointed out to support their contrary view i.e. identifying consciousness only with qualia—the private, inner mental objects, which makes it an oddly marginal phenomenon. We would go with Wittgenstein's view that consciousness cannot be detached from public, observable behaviour. If consciousness is separated in this way from everything that is publicly observable, then it may lead to either scepticism about other minds or epiphenomenalism i.e. the view that the whole burden of causality in human thought and action is carried by events in the nervous system. The psychological phenomena in themselves have no causal powers.

Wittgensteinian response can be seen as an attempt to save the human image on the one hand against the encroaching human sciences and physicalism and on the other against the attempts to reduce consciousness to 'epiphenomenal qualia'. Basic thrust of his stand is that consciousness cannot be explained completely even when all the physical or functional facts are known. Neither it can be understood when it is taken as 'what is left over' when all the physical or the functional facts are in. One ignores our inner lives and our subjectivity and the other does not take into account the public observable behaviour.

If consciousness is neither a pure physical entity nor a private, inner, mental object then what is it? This question provides an important direction to our enquiry and leads us to the basic debate between the physicalists and the advocates of qualia. The inherent flaws in their arguments are being pointed out here in the process of exploring an alternative perspective of the problem. This alternative is based on Wittgensteinian understanding of consciousness.

THE DEBATE

Wittgenstein's criticism of qualia enables us to understand properly how sensations are connected to bodily behaviour. And understanding the bodily behaviour comprehensively makes us to see clearly the flaws in physicalism. So the argument based on the view that it is qualia, which physicalists leave out of their account, does not serve the purpose of building our main thesis. Rather it is the point of attack in our discussion against physicalism itself.

To establish physicalist's thesis, philosophers like Daniel Dennett have argued against the notion of qualia. In his essay, "Quining Qualia," qualia have been understood as properties of a subject's mental state that are ineffable, intrinsic, private, and directly or immediately apprehensible in consciousness.[6] Dennett argues that a quale does not have intrinsic properties which are independent of our interpretation. He develops a series of thought-experiments in support of his argument. An example can be cited here from his essay. He considers two coffee tasters, one of whom thinks that his taste has improved over the years, so that while the coffee still tastes the same, he no longer likes it. The other taster thinks that his taste buds have deteriorated, so that the coffee no longer tastes to him as it once did, but he thinks that if it did, he would enjoy that taste as much as ever.[7] Now the question seems to be whether they have just changed their attitude to the same qualia. Dennett suggests that the question is meaningless, as we cannot separate out the qualia this way. We cannot separate off the purely 'given', the bare sensory material, from our conceptualisations and interpretations of it. He rejects the idea that "there are such things as qualia, that hides forever from objective science in the subjective inner sancta of our minds."[8]

Denett wants to get rid of the word 'qualia' and redefine the theory of consciousness within a materialist framework. He claims because subjective states have "ineffable" properties, they are only accessible from the first person viewpoint and therefore cannot be detected by physical strategies. While he allows for conscious experience, he is denying any special attributes of qualia as lived experience; the only thing experienced is alternations in brain states. The phenomena of conscious subjectivity that we know as our experience of the world is only the brain undergoing various neuro-chemical changes which cannot be directly observed or communicated by the subject. While Dennett is arguing against essentialism, his position appears to be essentially reductive. If we are nothing but brain states, then we have a fixed essence in the form of physical organization despite dynamic complexities in its transformation and evolution.

To believe in qualia, as Dennett defines them, is to suppose that a sensation has a character of its own which makes it independent of our attitude to it and our interpretation of it. But this will lead to considering sensations as mind-independent objects, which will be quite a peculiar way to think about sensations. To be a sensation is to be perceived. In other words, the reality of sensation is exhausted by its appearance to us. Therefore, Dennett's arguments against qualia are not all that illuminating. Rather they are indicative of the fact that physicalism cannot give an adequate account of consciousness. To think in terms of qualia as inner mental objects is to objectivize the subjective, to treat it as though it were a realm of mind-independent objects. It is an attempt to show that they are really physical things—kind of brain states. Physicalists assume that if consciousness were anything real it would have to be somehow objective. They want to say that there are not really any conscious states; consciousness is just the way in which the functioning of our brain states appear to us. It is an attempt to reduce, understate, or eliminate consciousness.

The argument against this form of physicalism, which advocates of qualia present, is that there are 'mental objects' and we perceive the intrinsic properties of these mental objects in an accurate and undistorted way. Wittgenstein would rather prefer to point out here that physicalism fails to handle the fundamental fact that we are beings to whom things appear, whether in distorted or undistorted way. It is nonsensical to say that there seems to be consciousness but there isn't really. If there seems to be consciousness, then there is consciousness. As John Searle puts it aptly:

> Eliminative reductions require a distinction between reality and appearance.... [But] where consciousness is concerned the reality is the appearance.[9]

Wittgenstein tries to make this point clearer that sensations are not things; any attempt to reduce sensations to physical things must fail. The very notion of a private object collapses as incoherent. If something is an object, there must be some criteria for us to recognise it as the same object we observed on a previous occasion. But in the case of my sensations in solipsistic isolation, Wittgenstein argues, I cannot produce such non-arbitrary criteria for re-identification. It may seem to me that the sensation I am having now is the same as the one that I was having some time ago. But if I have nothing further, beyond my own subjective feelings, to go on then, as Wittgenstein puts it, "...I have no criterion of correctness. One would like to say: whatever is going to seem right to me is right. And that only means that here we can't talk about 'right'."[10] Further, confirming the correctness of the first memory of the sensation will be like "if someone were to buy several copies of the morning news paper to assure himself that what it said was true."[11]

Here it is to be noted that what is denied is not the fact that I can correctly judge, for instance, the coffee I am drinking now is better than the one I tasted before; or I have lesser pain in my cramped muscles after taking the medicine. All that is denied is the claim that I could establish a language for my subjective sensations from scratch by considering them in isolation from the social and physical context in which I do actually experience them. As Wittgenstein writes:

> Only a living human being and what resembles (behaves like) a living human being, can one say: it has sensations; it sees; is blind; hears; is deaf; is conscious or unconscious.[12]

Further, even if I could develop a language for my subjective sensations, I would not be able to apply it to others. If I were able to attach meaning to a particular sensation 'S' as 'a state like the one I am feeling now', how could it even be intelligible that others could feel the same 'S'? Wittgenstein's analogy of the 'beetle in the box' makes this point clear—

> Suppose everyone had a box with something in it: we call it a 'beetle'. No one can look into anyone else's box, and everyone says he knows what a beetle is only by looking at his beetle—here it would be quite possible for everyone to have something different in the box. One might even imagine such a thing constantly changing—but suppose that the word 'beetle' has a use in these people's language—if so it would not be used as the name of a thing. The thing in the box has no place in the language game at all; not even as a something. For the box might even be empty. One can 'divide through' by the thing in the box; it cancels out, whatever it is.[13]

If the model of 'object and designation' is used to understand the grammar of the expression of sensation then the object drops out of consideration as irrelevant.

Wittgenstein's attack on the philosophical notion of qualia does not undermine our ordinary conviction that we are conscious and there is more to us than what can be recognized from the scientific approach. As we have seen, sensation is not a thing i.e. a mind-independent object like a rock or a tree, but then what is it? Wittgenstein provides a finer way to understand sensation:

> you will surely admit that there is a difference between pain-behaviour accompanied by pain and pain-behaviour without any pain?'—Admit it? What greater difference could there be?—'And yet you again and again reach the conclusion that the sensation itself is a *nothing*.'—Not at all. It is not a something, but not a nothing either! The conclusion was only that a nothing would serve just as well as a something about which nothing could be said.[14]

Dennett chooses to take a more radical stand than Wittgenstein's. He says:

> Qualia are not even "something about which nothing can be said"; "qualia" is a philosophers' term which fosters nothing but confusion, and refers in the end to no properties or features at all.[15]

In order to understand what sensation is, one needs to differentiate sensation-language from thing-language and then to observe carefully the way it operates in our talks about sensations. This lack of substantiality, which Wittgenstein ascribes to our sensations, makes them immune to physicalist reduction.

SECOND PERSON PERSPECTIVE

Basically physicalist aims at showing that my consciousness, my awareness—whether of rock, table or colours—is something physical. So the fundamental problem for physicalism from Wittgensteinian perspective is not that some of the objects of experience or the objects of acquaintance may be non-physical, but that the notion of experience or the notion of acquaintance itself is not a physical one. Physicalist gives an account of consciousness in terms of functional or behavioural dispositions to respond to the features of one's environment in a systematic way. They describe people as functionally organised complex physical systems, which become conscious in neuro-physiological structures. But this detailed account of neuronal firings, information processing or explicit bodily movements fails in providing a complete or adequate account of them, for it does not encompass what it is like to be those people. It does not fully capture what goes on when someone is sad or feels pain or is joyful. This reductive account of consciousness fails to do justice to the phenomenology of conscious experience.

To elaborate it, a scan of the brain activities of a person will give only the knowledge of the workings of a complex physical system. But there is no reason to suppose that the person has consciousness at all. It is only because we already know that we are conscious subjects capable of tracing that there are connections between our conscious experience and neural events. But if we just consider the neural workings by themselves, in abstraction from everything else we know, then this physical or functional information cannot lead us to the idea that the person has consciousness. As David Chalmers puts it:

> Our grounds for belief in consciousness derive solely from our own experience of it. Even if we knew every last detail about the physics of the Universe ... *that* information would not lead us to postulate the reality of conscious experience.[16]

Coming back to the question of nature of sensations, if they are neither private objects with which we are acquainted in pure introspection, nor reducible to the observable purely objective entities of natural science, then what are they? As discussed earlier, the two opposing views emerge out of the kind of explanations offered to it. These responses can be seen as *first person perspective* of subjective consciousness and the *third person perspective* of objective science. The conflict between the two has already been discussed. Now we can look for a way out of this deadlock.

Wittgenstein offers a way to resolve the classic problems of mind and body and of our knowledge of other minds by starting from, what we can call, *second person perspective.* That is neither from the introspection of the isolated subjects, nor from the objectivity of scientific observation, but from ordinary human interaction. He reminds us of some very obvious facts that we are all well aware of in our everyday life. We lose our grasp of them when we begin to theorise. Wittgenstein himself abstains from any such theorisation.

After disproving the theory of private ostensive definition, Wittgenstein points out the way in which we do actually learn the language in which we talk about the inner states of our own and of others. He puts forth the directive—'Don't think, look!' We are able to learn our language of inner states because we experience them and find a natural expression in it. These experiences are not dissociated from behaviour. Wittgenstein writes:

> Words are connected with the primitive, the natural expression of the sensation, and used in their place. A child has hurt himself and he cries; and then adults talk to him and teach him exclamations and later, sentences. They teach the child new pain behaviour.[17]

The relation between sensations and emotions, and the physical behaviour, facial expressions, gestures and so on which makes them manifest is, according to Wittgenstein, neither a casual relation between wholly distinct entities nor is it simply an identity. The inner states find a natural or 'primitive' expression in and through the physical behaviour. The link between sensation and behaviour enables us to develop a language for inner states, which we can apply both to others and ourselves. It means that other's pain is not compulsorily hidden from us, though it is definitely more than just the behaviour, yet it is manifested to us in and through their behaviour.

Further, the problem of knowing other minds cannot be satisfactorily explained from the first and the third-person perspectives. By contrast, for Wittgenstein, the problem gets resolved if we ask ourselves how do we in practice realise what state of mind somebody else is in. For, then instead of reasoning on the basis of any analogy or inference, we perceive the other's state of mind in his gestures, facial expressions and behaviour. What we see around us are not mere bodies, as understood objectively by the biologist or physicist, but we encounter human beings, and we perceive their pain, amazement, delight or whatever, in their faces, in their movements and gestures. Wittgenstein summarises it:

> Consciousness in another's face. Look into someone else's face, and see the consciousness in it, and a particular *shade* of consciousness. You see on it, in it, joy, indifference, interest, indolence and so on. The light in other people's faces. Do you look into yourself in order to recognise the fury in his face? It is there as clearly as in your own breast.[18]

Although it is true that we are often unsure of what another person is really thinking or feeling; we are not always very transparent to one another, but nor are we opaque as the Cartesian and Physicalist view would imply. There may be room for doubt about exactly what someone's state of mind is, but there is no room for scepticism as to whether he has a mind. It would be too much of an abstraction, if human actions are seen merely as the movement of a complicated physical stuff. This is not how we normally see one another. Our natural response to human behaviour is to see it as meaningful, as expressive of mind. So Wittgenstein's affirmation is that there is an essential link between consciousness and bodily behaviour.

As discussed earlier, physicalism fails to give a comprehensive explanation of man's conscious states. The problem here is that they start from the assumption that the physical or functional information is contained in the language of science—in physics, physiology, neurobiology, cognitive psychology etc. It is not possible to make any conceptual connections linking neurons, or abstract functional states, or bodily behaviour described in behaviourist terms, with consciousness. The scientific description of the body is arrived at precisely by abstracting from our normal—mentalistic—understanding of the human body, So if we say of a person that 'he has a big heart' or that 'he is warm-hearted'; we will be amazed if someone takes it as size or temperature of a physical organ. Thus it is obvious that the mind can't be fitted into the body as understood scientifically.

To sum up, Wittgensteinian attempt can be seen as an attempt to undermine the whole physicalist world-view by showing that we cannot take the abstract scientific account of the physical world, in particular the human body for granted. We can only integrate mind and body if we understand the body as we do in everyday life, and not as we do in science. But definitely it does not mean that we should in any way reject or devalue science or scientific understanding of the human body. It only means that we should reject the philosophical project of taking science as metaphysics. In other words, grounding all our claims to knowledge and validity about the world on scientific observations alone is unwarranted, for we make more sense of the world from our everyday life.

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R.C. Pradhan

Why Science Fails to Explain Consciousness: Wittgenstein's Way Out

This paper is a response to Vikram Singh Sirola's paper, "Why Science Alone Cannot Unravel the Mystery of Consciousness: A Wittgensteinian Perspective". Sirola's paper proposes to expose the difficulties in the physicalist and behaviourist account of consciousness. He argues that both physicalism and behaviourism fail to explain how consciousness is possible because of their reductive strategy and materialist commitments. The critique of these reductive theses from Wittgenstein's point of view is the main thrust of the paper. Sirola writes:

> Basic thrust of his (Wittgenstein's) is that consciousness cannot be explained even when all the physical or functional facts are known. Neither it can be understood when it is taken as 'what is left over' when all the physical or functional facts are in. One ignores our inner lives and our subjectivity and the other does not take into account the public observable behaviour (p. 4)

The Wittgensteinian stand is supposed to be that consciousness is not the same as, or reducible to, the physical or functional facts. According to this view, consciousness is neither a physical nor a functional fact about man. Nor is it the private 'qualia' to be located in the inner life of the human subjectivity.

Sirola's arguments are based on the Wittgensteinian presupposition that mind or consciousness is something to be seen only in the place where it belongs to, namely, the human being. "Only of a living human being and what resembles (behaves like) a living human being, can one say: it has sensations; it sees; is blind; hears; is deaf; is conscious or unconscious" (*PI*, section 281). This suggests that consciousness is attributable only to living human beings and what resemble them in the natural world.

In my paper I would argue that though Sirola is right in applying Wittgenstein's method in solving many issues regarding consciousness, namely refutation of physicalism and behaviourism, he has not taken into account Wittgenstein's basic differences with the current philosophies of mind. I will highlight some of Wittgenstein's concerns in this regard which are rather partially reflected in the paper under reference.

I

WITTGENSTEIN ON HUMAN BEINGS AND CONSCIOUSNESS

Wittgenstein takes it for granted that consciousness is generally and factually ascribed to living human beings. That is, human beings are the subjects of consciousness. He makes it clear in the passage quoted above that only human beings and those resembling them like animals are the subjects of consciousness. There are two implications which are most likely to follow from this:

1. Human beings and to some extent the animals are said to be either conscious or unconscious. They see, hear, have sensations like pain and pleasure, and so on. However, though the animal world in general has the capacity to be conscious, it is the human beings who are the primary subjects of consciousness.
2. Human beings alone among conscious beings are conscious that they are conscious. That is, human beings alone are self-conscious, that is, are aware that they are conscious.

Both the presuppositions are crucial for Wittgenstein because his theory of mind and consciousness is singularly based on them. His rejection of both the Cartesian and non-Cartesian theories of consciousness is based on the fact that both the theories are wrong because they do not take into consideration the facts regarding consciousness. They miss the facts which stare us in the face. Consciousness is not something we invent or make; it is the fact about us. The language-games we play display this and not the theory which we profess. The language-game of "pain" displays what pain is and not the concepts that we have regarding pain. Wittgenstein writes:

> What I do is not, of course, to identify my sensations by criteria: but to repeat an expression. But this is not the end of the language-game: it is the beginning. But isn't the beginning the sensation—which I describe? Perhaps this word "describe" tricks us here. I say "I describe my state of mind" and "I describe my room". You need to call to mind the differences between the language-games (*PI*, section, 290).

This reminds us of the fact that the way we play the language-game of "pain" shows how we come to know about pain. It is the use of language of pain that needs to be identified and distinguished from the language of objects. The whole idea of consciousness lies in the language of sensations, according to Wittgenstein.

Wittgenstein makes a distinction between the "pain-patches" and the "colour-patches" (*PI*, section 312) keeping in mind the fact that we have two ways of describing them and that they are two distinct things to be talked about. We cannot talk of pain-patches in the same way we can talk about the colour-patches. This shows that the language of pain-patches is distinct from the language of colour-patches.

II

DENNETT AND WITTGENSTEIN ON QUALIA

Sirola has rightly pointed out that Wittgenstein has no sympathy for the Cartesian conception of the soul as distinct from the body and for the consequent idea of Cartesian subjectivity with private conscious states like the qualia. Before Dennett[1] argued for the "quining of qualia", it is Wittgenstein who had developed the private language argument to deny qualia as the private metaphysical entities. His private language argument is the surest method of refuting qualia as the private entities. Wittgenstein's "beetle box" example shows the way the so-called private object ultimately has no place in the language-game which the people play with the word "beetle" while pointing to the beetle in the box which they have for themselves. "The thing in the box has no place in the language-game at all; not even as a something: for the box might be even empty.—No, one can 'divide through' by the thing in the box; it cancels out, whatever it is" *(PI,* section 293). That is to say, any talk about the private object is of no consequence as long as the thing has no place in the language-game. So is the case with the private sensations which have no place in the public language-games. However, Wittgenstein shows that as public objects sensations have reality in the language-games played by us. Thus he denies sensations as private objects but admits them as publicly available objects.

Dennett's refutation of the qualia is un-Wittgensteinian to say the least. His argument, as Sirola points out, is to deny that there are any such private, ineffable and ineluctable objects as the qualia or the first-person experiences.[2] It is based on the idea that in a purely physical system like the human being there is no scope for such entities. The first-person experiences are ontologically ruled out because there are no such entities per se. Human mind is as much a myth as human consciousness; therefore there is no reason to hypostatize such entities.

Dennett's argument is physicalist and functionalist which shows that qualia are forbidden by virtue of the fact that they are not admissible into the physical and functional facts. The first-person experiences lose out in the game of ontological parsimony endemic to physicalism and functionalism. Wittgenstein, however, does not go for an ontological eliminationism. For him, sensations and other mental states are not mythical entities which can be eliminated. They are expressed in the language-games and are real for all those who use the language. Wittgenstein writes:

> ... you will surely admit that there is a difference between pain-behaviour accompanied by pain and pain-behaviour without any pain?'—Admit it? What greater difference could there be? 'And yet you again and again reach the conclusion that the sensation itself is *nothing*.—Not at all. It is not a *something*, but not a *nothing* either! The conclusion was only that a nothing would serve just as well as something about which nothing can be said *(PI*, section, 304).

The above passage does not commit Wittgenstein to eliminationism of any sort. All that he wants to press forward is that the sensations are not "nothing", though he hesitates to say that they are "something". Definitely he rules out that they are something like qualia about which nothing can be said. It is the privacy of the sensations that he rules out, not the sensations themselves. Wittgenstein's ontological tolerance regarding sensations and qualia cannot be a "philosopher's term which fosters nothing but confusion and refers in the end to no properties or features at all".[3]

Wittgenstein's rejection of the Cartesian subjectivity is not contingent on his rejection of subjective experiences called qualia. Nor is he necessarily against the first-person experiences which are a part of our language-games. He is not against the idea that human beings are persons or selves who can use "I", "we", etc. He only disowns the idea of self that equates it with the human body or with a disembodied spirit. The following passage makes it clear:

> Think of a picture of a landscape, an imaginary landscape with a house in it.—Someone asks "Whose house is that?"— The answer by the way, might be "It belongs to the farmer who is sitting on the bench in front of it". But then he cannot for example enter his house *(PI*, section, 398).

The self is like the owner of the house in the imaginary picture. The house belongs to the farmer who is sitting in front of the house. The house belongs to him, but he cannot enter it. So is the self who is the owner of the experiences of the world but is not part of the world. It is presupposed by the world. There is no meaning in saying that self owns the world.

The idea of subjectivity which the Cartesians use is the idea of an owner or one to whom the experiences can be ascribed. This thinking and owning self that has experiences is not acceptable to Wittgenstein because it leads to solipsism and subjectivism. The self that is the presupposition of the world is welcome as a relief from the Cartesian Ego-centrism.

III

WITTGENSTEIN ON THE FIRST PERSON

Wittgenstein does not overthrow the first person point of view like the physicalist and the behaviourist as suggested by Sirola. Sirola's (pp. 10–12) contention is that the first person is buried along with the qualia and that instead it is the second person which is emphasized by Wittgenstein. His argument is that the first person point of view is the source of the qualia and other subjective experiences. Wittgenstein does not opt for the third person point of view espoused by the physicalists and so he in order to avoid the private experiences opts for the middle course, i.e, the second person point of view.

But the fact of the matter is that Wittgenstein does not disown the first person point of view in the way the physicalists and behaviourists have done. Had he done that his position would have been non-different from that of the latter. Instead he takes away the metaphysical aura from the first person, the "I", and places it in the midst of the common world which is the home of the language-games. The *I* as the speaker and the communicator is very much in the midst of the world with which it is in constant interaction. The first person, both in singular and plural, is a part of the world and is the player of the language-games. The human beings in this case are in the we-position rather than in the I-position.

This ensures the presence of the first person without the metaphysical aura of the Cartesian Ego. The metaphysical or transcendental self, if any, is outside the boundary of the world like the owner of the house referred to above. But the experiencing and thinking self is very much within the world.

The so-called second person is incomplete without the first person and hence to claim that Wittgenstein retains the second person without the first person is not correct. If Wittgenstein has retained the second person perspective, then he by implication has also retained the first person perspective. The third person perspective identified as the scientific and objectivist perspective is of course unacceptable because that invites the *loss* of the very notion of self. Wittgenstein is decidedly against the so-called scientific world-view. Wittgenstein is not only against physicalism and behaviourism but also against any theory like functionalism which is inspired by the science of computation and machine intelligence. He is against the very idea of a machine that thinks. He writes:

> Could a machine think?—Could it be in pain?—Well, is the human body to be called such a machine? It surely comes as close as possible to being a machine.
>
> But a machine surely cannot think!—Is that an empirical statement? No. We can only say of a human being and what it is like one that it thinks. We can say it of dolls and no doubt of ghosts too. Look at the world "to think" as a tool *(PI,* sections 359-360).

This passage tells us that the word "think" has use only regarding the human beings and not about the machines. The dolls and ghosts are at least closer to human beings and not to the machines. By no stretch of imagination can the machine be called a thinking being. The machine cannot say "I am in pain". It lacks the necessary conditions for ascription of pain to itself.

Wittgenstein's rejection of functionalism and the machine theory of mind is based on his strong argument that only human beings have mind and none else. It is further based on his plea that thinking and feeling and other psychological experiences are ascribable to the human persons and not to the automata.

IV

ON THE AVAILABILITY OF THE IDEA OF THE SOUL

It is to be noted that much against the opinion of his contemporaries Wittgenstein holds that human beings are not only not machines but also have souls in the way he understands it. A human being is a person who has thinking, feeling, willing, etc. and thus has a soul. Having a soul is having all that we ascribe to human beings but not to inanimate things. Wittgenstein writes:

> And can one say of the stone that it has a soul and that is what has the pain? What has a soul, or pain, to do with a stone?
>
> Only of what behaves like a human being can one say that it has pains.
>
> For one has to say it of a body, or, if you like of a soul which somebody has. And how can a body have a soul? (*PI*, section 283).

It is only the human beings who can be said to have souls. Mere bodies cannot have a soul for the simple reason that they do not have the human behaviour. The concept of soul is intelligible only with regard to a human being or something resembling him or her. As Wittgenstein puts it:

> My attitude towards him is an attitude towards a soul. I am not of the *opinion* that he has a soul... The human body is the best picture of the human soul (PI, II, iv, p. 178).

That is, the human beings are legitimately seen as souls and not as bodies which have souls. In the case of human beings, the soul-body distinction does not make much sense because what we call the soul is 'pictured' in the human body.

Wittgenstein does not accept the Cartesian distinction between the body and soul because in that case we have to say that the human body is attached to a soul, which does not make much common sense. Man has a soul for the obvious reason that human beings react amongst themselves in a certain way. The human forms of life constitute the web of human life or the life of the human soul, e.g. grief, crying, feeling pain, etc.

In this context, it is worthwhile to raise the question whether Wittgenstein reduces the mental states like pain to pain-behaviour the way the behaviourists do. Sirola has very aptly raised this issue in his paper and has shown that Wittgenstein is not a reductionist like the physicalist and functionalist. But the question is: How does Wittgenstein explain the relation between pain and pain-behaviour? Is it a case of necessary relation or a case of contingent relation? If it is a case of necessary relation, then we cannot conceive of pain without its expression in behaviour. This seems to be Wittgenstein's own position because he cannot allow the other kind of relation to occur because that will commit him to the existence of pain without pain-bahaviour. But by admitting necessary relation, he does not commit himself to reductionism of any kind.

Wittgenstein's warning against physicalism and behaviourism is that the psychological states cannot be wished away by any conjuring trick. These states do constitute a part of human life. If we take only the pain-bahaviour as real, we will miss pain itself and hence we will fall short of understanding human beings. To a sceptic who doubts that there is anything called consciousness, he writes:

> ... And now look at a wriggling fly and at once these difficulties vanish and pain seems able to get a foothold here, where before everything was, so to speak, too smooth for it *(PI,* section, 284).

This way of saying reminds us that as long as we continue to behave like human beings and use language the way we do, there is no place for doubt regarding the conscious states that we naturally have.

V

WITTGENSTEIN ON WHY SCIENCE FAILS TO EXPLAIN CONSCIOUSNESS

One of Sirola's main contentions is that sciences like physics, biology and neurology cannot explain consciousness because they miss consciousness while explaining the way consciousness is caused by the physical and neurological processes. They provide excellent explanations of how consciousness arises in the human brain but fail to explain why it arises at all. This problem of the 'why' of consciousness is called the "hard problem" by David Chalmers.[4] Chalmers writes:

> We have good reason to believe that consciousness arises from physical systems such as brains, but we have little idea how it arises, or why it exists at all. How could a physical system such as a brain also be an *experiencer*? Why should there be *something it is like* to be such a system? Present-day scientific theories hardly touch the really difficult questions about consciousness, we do not just lack a detailed theory; we are entirely in the dark about how consciousness fits the natural order.[5]

Chalmers' contention is that even if we know all the physical facts about the brain, we cannot just tell what conscious states will follow. Conscious states are a different stuff altogether which cannot be logically inferred from the physical facts. It is because the physical facts do not entail the facts regarding consciousness. There is an explanatory gap[6] between the facts of consciousness and the physical facts. The first-person experiences constitute the basic stuff which remain beyond the explanatory capacities of the sciences. It is these experiences which need a different sort of explanation altogether.

Wittgenstein seems to agree with the suggestion that science in itself cannot unravel the mystery of consciousness. He accepts the view that the domain of the sciences is the domain of facts which exclude the self or the first person subject.[7] Thereby he makes a distinction between what can be described from the third person point of view and what is given only in the first person account. He labours hard to tell us that the first person experiences are immune to scientific or third person explanation. It is not that they need any explanation. But if they need at all, they cannot be given any scientific explanation.

The hard problem of consciousness, for Wittgenstein, is not that there is a why question for consciousness, or that an elaborate explanatory theory is necessary to explain consciousness. For him, the facts of consciousness are so evident to every conscious being like ourselves that we need no theory to explain them. Theories have rather a tendency to distort the facts and can in fact misinterpret them. Thus the scientific theories are ruled out as the possible ways of explaining consciousness. But the fact of the matter is that consciousness is real and for every body to see in himself and others. So ultimately there is no hard problem in Chalmers' sense philosophers, the idea of mystery has come from science itself which attempts to solve mysteries. But philosophy hankers after no such mystery and hence it is content with describing things as they are. Chalmers' hard problem is ultimately a problem for science to solve and therefore there is not much against the scientific explanation in his way of treating consciousness. He says:

> I argue that reductive explanation of consciousness is impossible, and I even argue for a form of dualism. But this is just part of the scientific process. Certain sorts of explanation turn out not to work, so we need to embrace other sorts of explanation instead. Everything I say here is compatible with the results of contemporary science; our picture of the natural world is broadened, not overturned.[8]

Thus Chalmers does not reject scientific explanation of consciousness; he prefers a set of non-reductive explanations which can do justice to the phenomenology of the first-person experiences.

For Wittgenstein, however, the hard problem can be dissolved by appealing to the description of the conscious life of human beings. Whereas Chalmers wants a superior theory to explain consciousness by appealing to the internal mechanisms of the conscious processes, Wittgenstein discredits the whole approach as misguided and as a psuedo-scientific adventure.

Wittgenstein's rejection of the scientific method in philosophy owes to his idea that philosophy has nothing do with scientific explanation and that philosophy is content with the description of the facts regarding language. This explains why there are no deep questions in philosophy which need a scientific metaphysics to solve them. The idea of a hard problem of consciousness and the idea of mystery of consciousness fall into this category of scientific metaphysics.

The idea of mystery of consciousness is a case in point. Is there a mystery of consciousness for Wittgenstein? Of course not. Everything regarding consciousness is open to view, according to him and hence there is no mystery. There is mystery only for those who do not locate consciousness in human beings and their forms of life. For the philosophers, the idea of mystery has come from science itself which attempts to solve mysteries. But philosophy hankers after no such mystery and hence it is content with describing things as they are.

As Wittgenstein puts it:

> Philosophy simply puts everything before us, and neither explains nor deduces anything.—Since everything lies open to view there is nothing to explain. For what is hidden, for example, is of no interest to us (*PI*, section, 126).

VI
CONCLUDING REMARKS

Wittgenstein is not in agreement with the current debates in philosophy of mind because he finds that all the issues regarding consciousness are the results of the application of scientific method in the domain of human life and experiences. He is aware of the fact that science cannot solve the problems regarding human consciousness. This is so not because consciousness is a mystery, but because it is a phenomenological fact about us. This fact is not something to be explained by postulating a super fact either in the form of a physical fact or in the form of something equally intractable in our life and language. Hence science proves to be unavailable for explaining consciousness.

Sirola is right in drawing our attention to the fact that Wittgenstein has rejected "the philosophical project of taking science as metaphysics" and thus has saved the phenomena of consciousness from the currently available models of the so-called science of mind and consciousness.

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A. Kanthamani

Why Science Alone Should Explain Consciousness: A Response

The main attraction of Sirola's contention that "Science alone cannot unravel the mystery about consciousness" is the dogmatic stand it takes against reductionism, physicalism, materialism, functionalism etc. all of which bet on the neurological understanding of mind. So he is an uncompromising sceptic about cognitive science. His endorsement of a (presumably anti-scientistic) Wittgensteinean 'second person perspective' is just a consequence of this dogma—a dogma that is shared by many of our leading philosophers in this country. Sirola wants to be a behaviourist of a Wittgenstein hue, but not a neurobiologist like Churchland. More than anything else, this spells trouble for him. The impact cognitive science has had on the thinking of these philosophers in this country is correspondingly negligible in this domain. Let me call this as *Pradhan's Dogma* after Professor R.C. Pradhan.

According to Professor Priyedarshi Jetli, Pradhan can beg many crucial questions even while arguing against Dennett. To the question what is mind (and its cognates)?, he answers by saying 'Mind is'. Just as when you ask 'Does God exist?', he may answer 'God is', he affirms its ontology (it is a fact). Pressed further, he may say that 'Mind is a fact'. Pressed further, he may say that 'mind is *just* a fact' as any other facts of the world, without which you cannot understand others. If you ask 'What is a fact?, he may answer 'A fact is (everything is a fact)' *sans* science, whether acceptable or not.

As it is obvious, Sirola subscribes to this *bad* tradition which is attributed to Wittgenstein and made poor of India's scholarship on Wittgenstein (I was hesitant to review his *first* volume of *Hyderabad Studies in Philosophy* for fear of offending him). Unfortunately, the majority of philosophers are on this side of the camp. My sadness is relieved by the fact that Professors like G.P. Ramachandra (M.G. University), and Jetli (Delhi) are on this side. One wonders whether the decision to give a chance of survival to such a stand is equally open to suspicion. I can only repel any such misunderstanding because the avowed aim of this Journal is to allow access to critics.

Since I have a heavy debt to these neurocomputational perspectives for the last many years, my response can never be expected to toe the above line of thinking. What makes me nervous in such undertakings is that you can never convince a person who has already ingrained his mind with such a belief that science cannot do anything in this direction. Since my task is to take Sirola as much seriously as I can without giving any impression of affront, I shall proceed very cautiously. If only he were a student under me, I can apostate him to change the prototype of his neurotransmitter so that he can modify his account in the light of exposure to: *neurobiology alone can explain*. I can make him to take a hard look at his Dennetts and his Wittgensteins. He is patently wrong.

Contrary to his belief, consciousness, mind, self, subjectivity have become the staple dish of cognitive science. Brain researchers like R. Llinas, Pellionisz, Pare, Damasios and Churchlands come with open arms to initiate dialogues with philosophers and even suggest how to do metaphysics, epistemology, ethics and logic in terms of understanding their neurobiological basis (Llinas and P. Churchland 1996/1998); A. Kanthamani (2005). It is not to Sirola's liking (p.14). He hardly realizes that one is not expected to fold up the very discipline of philosophy when they alley themselves with scientific understanding. There are quite a good number of philosophers among us who are ready to take up cudgels in favour of scientific understanding of these issues. They argue against the status quo in leading journals. Sirola acknowledges the developments in cognitive science. But he fights shy of it for they can hardly enlighten on questions about mind or qualia.

The following steps testify how weak his arguments are:

Step 1: Cog Sci cannot penetrate into the concept of mind, because it is inner.

Step 2: So, they all leave out 'consciousness'.

Step 3: Qualia is private; so they cannot explain its phenomenology.

Step 4: But, Wittgenstein's Qualia is public, because it is connected with overt Behaviour: Have a 'look at' it to develop the language of the inner.

Step 5: Therefore, Wittgenstein provides a contrary, and a possible alternative.

Step 6: If so, the more radical Dennett is wrong to extirpate Qualia by Quining Qualia.

Step 7: But still he grants a mind-independent status to Qualia.

Step 8: Therefore, Dennett's treatment indicates the existence of Qualia.

Step 9: Dennett cannot deny this 'indication (he presumes it).

Step 10: We can tally this with Searle's view on the reality of appearance; so,

Step 11: We can deny first person perspective: mind is not exclusively subjective; and

Step 12: We can also deny the third person perspective: it is not objective.

Step 13: So, we can follow the second person perspective (a behavioural view).

Step (1) is *the* dogma. Step (2) is supported by the 'left-out hypothesis' for non-reductive *materialism.* But this is not what he needs because this can hardly support his dogma. Step (3) is only an assumption, in the light of (2), but he turns to show that the inner is accessible through the outer. So, phenomenology is a non-starter. *Pace* Pradhan, Step (4) articulates Wittgenstein's behaviourist stance (Wittgenstein denies everything private).

Again *pace* Pradhan, Step (5) is the conclusion from (1) to (4). Step (6) critiques Dennett (*pace* Pradhan) and it is justified by (5). Jetli has called attention to Pradhan's 'lack of knockdown argument' (219) much else besides. It is left for Sirola to show either Dennett is a behaviourist or he should grant the inner (and not an instrumentalist). This is granted by the indigenous Step (7) and (8), and also (9). Squaring this with Searle requires him to assert that whatever appears *is* real (though Searle would not accept this simplistic reading (Step 10). The cruces are the next three steps. Step (11) is supported by the behaviourist step. Step (12) refuses to grant recognition to reductionism. With a flourish of naivete, Step (13) augments the behaviourist step which is mostly discredited today, since it denies the inner.

It should have been reformulated as above. The ball is in his court.

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Satya P. Gautam

Understanding Human Consciousness: A Wittgensteinian Perspective

> How does the Philosophical problem about mental processes and states and about behaviourism arise?—The first step is the one that altogether escapes notice. We talk of processes and states and leave their nature undecided. Sometime perhaps we shall know more about them—we think. But that is just what commits us to a particular way of looking at the matter. For we have a definite concept of what it means to learn to know a process better. (The decisive move in the conjuring trick has been made, and it was the very one we thought quite innocent.)
>
> Ludwig Wittgenstein, *Philosophical Investigations, #308*

This paper attempts to pursue the issues raised in Vikram Singh Sirola's paper, "Why Science Alone Cannot Unravel the Mystery of Consciousness: A Wittgensteinian Perspective", R.C. Pradhan's Comment on Sirola's paper, "Why Science Fails to Explain Consciousness: Wittgenstein's Way", and A. Kanthamani's comments on Sirola and Pradhan "Why Science Alone Should Explain Consciousness: A Response to Doctor V.S. Sirola". Sirola's paper and subsequent comments relate to Wittgenstein's questioning and unique critique of familiar but mystifying approaches to the understanding of human consciousness such as Cartesian dualist ontology of mind-body relationship, behaviourism, mind-brain identity thesis and *scientistic* quest for a reductionist explanatory account of human consciousness. Wittgenstein's sustained concern with basic issues in philosophy of psychology was a manifestation of his radical conviction that the two fundamental aspects of human consciousness, sense-experience and thought can be understood in their richness and complexity only by questioning and revising the traditionally taken for granted inner-outer metaphor invoked to capture our mental life. Examining and elucidating the so-called realm of the inner mental life, Wittgenstein questioned and rejected the private language argument and suggested a new way of seeing our relationship to language and the variety of concepts which we use to express and talk about our sense-perceptions, feelings, desires, hopes, intentions, thoughts and other distinctive aspects of our human form of life.

Our being conscious is the most obvious and intimate feature of our being human. In *Philosophical Investigations,* Wittgenstein offered several thought experiments to show that our being conscious is an indubitable fact of the natural history of our being human. As he very aptly put it:

> Human beings agree in saying that they see, hear, feel and so on (even though some are blind and some are deaf). So they are their own witnesses that they have *consciousness.*—But how strange this is! Whom do I really inform, if I say "I have consciousness"? What is the purpose of saying this to myself, and how can another person understand me?—Now, expressions like "I see", "I hear", "I am conscious" really have their uses. I tell a doctor "Now 1 am hearing with this ear again", or I tell someone who believes I am in a faint 'I am conscious again" and so on.... Is my having consciousness a fact of experience?— But doesn't one say that a man has consciousness, and that a tree or a stone does not?—What would it be like if it were otherwise? —Would human beings all be unconscious?—No; not in the ordinary sense of the word. But I, for instance, should not have consciousness—as I now in fact have it." (Philosophical Investigatives, as on page 1, 416–18)

As we grow up, we become directly aware of our experiential, reflective and active capacities. An awareness of the world and an awareness of our own self are two facets of human consciousness.

Human consciousness, thus, includes awareness or experiences of the external world as well as an awareness of what we tend to call our own mental states such as having of sensations, perceptions, thoughts, feelings, wishes, desires, beliefs and intentions. This seemingly inner world of our consciousness consists of our memories, hopes, fears and phantasies which are constantly expanding.

As self-conscious beings, we are not only aware of objects of our experience but also aware of ourselves as experiencing subjects. Our self-awareness has a complex structure in terms of our ability to recall our past experiences and an ability to envisage future possibilities. We see our experiences not only as succeeding one another but also as experiences of our own life. How do we achieve this unity of self-consciousness? As infants, we lack self-consciousness. During the early stage of our life, we are conscious, but we are not conscious of our being as a self. We learn the truth of unity of our self-consciousness as we learn lo live and grow from infancy to adult life, to participate in the affairs of our community as active and responsible members, to lead a full-fledged human life.

The nature, meaning and basis of our consciousness have been a subject of interest and curiosity in all civilisations and cultures since the very dawn of humanity. Much of religious, philosophical and literary writings have addressed the questions concerning the meaning and goals of human existence from different perspectives. However, contemporary trans-disciplinary interest in the study of consciousness extends beyond the traditional spheres of religion, philosophy and psychology to disciplines as diverse as artificial intelligence, information theory, neuro-biology, psychopharmacology and physics. This interest has yielded significant information. Yet, consciousness remains one of the greatest mysteries as philosophical and scientific debates and discussions on the subject are full of conflicting characterisations and conceptual confusions. Wittgenstein underlined the 'misleading parallel' in the approach of psychologists to treat

> "of processes in the psychical sphere, as does physics in the physical. Seeing, hearing, thinking, feeling, willing, are not the subject of

> psychology *in the same sense* as that in which the movements of bodies, the phenomena of electricity etc. are the subject of physics. You can see this from the fact that the physicist sees, hears, thinks about, and informs us of these phenomena, and the psychologist observes the *external reactions* (the behaviour) of the subject." (*PI* as on page 1 571).

There may be little agreement among us as to what consciousness is, yet most of us would agree that we are conscious and chairs, tables, rocks, mountains, stars, clouds and rivers are not conscious.

The answers to the question "What is consciousness?" vary in terms of one's theoretical orientation, metaphysical presuppositions and conception of knowledge. The question is both familiar and perplexing. The familiarity stems from the fact that the question concerns our very being. The perplexity lies in the incompleteness of our understanding of ourselves, and the modes, levels, degrees and states of our consciousness. A little reflection and care makes it abundantly clear that we are far away from knowing ourselves than we like to think. The more we discover about ourselves, the more perplexed we may become about who and what we are unless we come to terms with ourselves. Coming to terms with one's self involves a quest for the identity, unity and wholeness of one's self.

There is a lot about consciousness that we still do not understand. There are so many questions to which we do not have clear or definite answers: Is it possible to draw a clear line between the realm of the conscious and the realm of the mental? Is it correct to characterise the brain, a biological organ, as conscious? How it becomes possible for us to become aware of our selves? How do we become capable of reflecting upon our own conditions and circumstances and evaluate them for future choices and decisions? How do we become capable of feeling sorrow, grief, love, joy bliss and remorse? Are other living organisms also capable of having experiences like us? Can computers ever become conscious in the sense in which human beings are conscious of themselves? These questions continue to get attention, and divergent answers are the sources of great debates in philosophy of mind.

It was during the mid-nineteenth century that the modern scientific enterprise of psychological research was launched. Psychology was defined, for the first time, as an independent field of study, separate from philosophy, biology and physiology. Consciousness, mental events and processes, feelings, perceptions, thoughts and recollections constituted the subject matter of psychology. It was obvious to Wundt and Titchner, pioneers of modern scientific psychology, that there is no way for you to experience my thoughts, wishes, desires and feelings or for me to experience yours. Only you can experience your thoughts and feelings as I can do mine. They concluded, therefore, that only way to study conscious experiences is to make each of us to 'look within', to observe and record the sequences of our own experiences, which constitute our mental lives. Initially, this style of experimental research was quite influential in the genesis and evolution of psychology as an experimental science. But modern science, insists on some method of public testing of its assertions, of confirming or disconfirming its claims, some way of resolving disagreements. For doing science, we need objective, repeatable observations, observations that we can count on. Science would not admit evidence that is not accessible to public scrutiny. It should be possible for me to inspect your evidence and for you to check mine. The method of introspection does not provide for the testability of the claims and, therefore, came under strong criticism from the votaries of scientific method. The concern for restricting psychological investigation to observable public data resulted in the abandoning of introspection as a method of research in psychology.

It is obvious that my wishes, desires, beliefs, thoughts, and my intentions cannot be directly observed and objectively recorded. Therefore, as a scientific discipline, psychology had to steer clear of the possibility of any speculative discussion of such unobservable mental phenomena. Restricting Psychology to the domain of the observable led to the emergence of the behaviourist approach. Though others may not be able to watch my beliefs, wishes, desires, thoughts and intentions but they can definitely observe my behaviour and actions. Consequently, consciousness and mentalist discourse were exiled from the behaviourist psychology as the data relating to observable behaviour was the only 'objective' data available for study. Behaviourist Psychologists began to ignore, even to deny, the very existence of consciousness, as it did not fit into the dominant scheme of scientific research. But it did not take long to recognise that a great deal of what human beings do could not be adequately described and explained in terms of observable behaviour. The critics of behaviourism pointed out that when a human being responds to some stimulus from the environment, the response is invariably guided by the individual's perception and understanding of the situation. Without considering a *respondent's understanding* of the situation, stimulus and response, it may not be possible to provide an appropriate and adequate description of the behaviour of the concerned individual. This serious limitation spells trouble for the behaviourist's approach in psychology. There is no way in which the teleological model of understanding goal-oriented activities can be replaced by a causal model consisting of descriptions of sensory events and bodily movements connected by law-like generalisations. The principal forms of behaviourism turned out to be inadequate to the task of an empirical psychology. Behaviourism proved incapable of eliminating mental terms at either the descriptive or explanatory level. In striving for the *scientific objectivity*, the behaviourists had sought to exclude mentalist discourse, which could not be done away with if we wanted to study human behaviour as distinctively human. We seem to be nearing an impasse. Whenever we try to describe, explain and make sense of the activities of an individual, we need to comprehend her mental life in the context of the social situations in which she is located. The moral of the story is that if we wish to talk about consciousness in any significant manner, we cannot begin by doing away with the very concepts, which we use to describe the functions, levels and modes of human consciousness. Wittgenstein commented on the inherent limits of the so-called scientific psychology in the following manner:

> "The confusion and barrenness of psychology is not to be explained by calling it a "young science", its state is not comparable with that of

> physics, for instance, in its beginnings. (Rather with that of certain branches of mathematics. Set Theory.) For in psychology, there are experimental methods and *conceptual confusion.* (As in the other case conceptual confusion and methods of proof.)
>
> The existence of the experimental method makes us think we have the means of solving the problems which trouble us; though problem and method pass one another by." (*PI*, p.232).

Traditional philosophies of mind have used common mental locutions while discussing issues relating to human condition. In doing so, it was assumed that mentalist terms were being employed to refer to attributes, states or processes of mind. Mind has often been conceived as the site for the functions and attributes called 'mental'. A salient feature of the philosophy of mind in the twentieth century was to question or challenge the received view that mind was a substance, a place or a realm that houses a particular kind of activities or attributes which are separate from the normal human bodily functions. Wittgenstein played a significant role in questioning the received view. Wittgenstein did not take the path of denying the existence of psychological or the mental, reducing them to behaviour, identifying them with the states of the body. Instead, he proposed that the so-called mental phenomena be seen as conditions of human life manifested through the human body. Wittgenstein's texts suggest that in using mental locutions, we articulate how things stand and move for us in our moment-to-moment involvement with persons, objects and situations. Our mind consequently is how things stand and are going for us; and mental phenomena are aspects and ways of a particular dimension of human existence: how things stand and are going for someone. These aspects and ways, according to Wittgenstein, are expressed through bodily *doings and sayings.*

Some mental phenomena, such as hunger, thirst and pain, are biological in origin and human body is the medium of their expression. However, patterning of the inter-relations between such mental phenomena and our attitude towards them is socially constituted. Which aspects of how things stand for us and how these are expressed by particular bodily activities, depends on the ways in which we learn to participate in social practices. For Wittgenstein, words such as "pain", "joy", "belief, "thinking", "hope" and "doubt" do not refer to any mysterious inner processes but are used to articulate how things stand and are going for us. The conditions thereby articulated are states of human affairs, not any kind of entities. Mind is thus primarily instituted and achieves its degrees of complexity only within the range of *bodily doings* and *sayings* which we learn to perform and understand. For Wittgenstein, expressions and behaviour, language and understanding are bound together within the human form of life. Wittgenstein's writings offer a new perspective on the ontological status and structure of mind, its relation to the human body and its social constitution. Wittgenstein invites us to go beyond the traditional dichotomy which characterised the mind as the 'inside' or 'inner' feature of a human being while designating 'behaviour' as the 'outside' or 'external' feature. Wittgenstein rejected the Cartesian sense of an "inner' realm without rejecting the existence of mental phenomena. Wittgenstein is neither a behaviourist, claiming that mind is nothing but bodily activity, nor a mentalist, maintaining that mind is a distinct and substantial realm separate from the human body. For Wittgenstein, the living human body manifests and signifies psychological or mental states of affairs through its *doings* and *sayings*. Wittgenstein's position is neither behaviourist nor mentalist since aspects of how things are seen and understood by us are neither identical with our behaviour nor are they components or states of a substance or a realm separate from the human body. For Wittgenstein, our life has, so to speak, two faces: a continuous behavioural one "open to view" in the public world, and an intermittent "experiential" one accessible only to the individual concerned.

Traditionally, the "inner life" or "inside" of a person was understood as the person's mind, the interior realm of representations, feelings, desires and other mental entities or events or states to which that person alone has direct cognitive access. To speak of an inside or inner realm was to emphasise the privacy of this realm. We learn from Wittgenstein that human life has two types of inside.

The first is the interiority of sensations, feelings and images. Like the Cartesian inside, this inner is private. If I am in pain, I experience this in a way no one else can. I feel my pain and others can observe my expressive behaviour and empathise with me and tend to my situation. The second sort of 'inside' are conditions of human life in general. Human life-conditions impose the inside of the life in the sense of the content and direction of our lives, what is going on and how things stand in life for us. It is this inside which sometimes others can understand better than the person of whose life it is the content. A person does experience her condition in a manner no one else can. But friends and associates, sometimes, are in a better position than the person herself to specify how things stand or are going for her.

A living human body becomes a manifester, signifier, constituter, interpreter and evaluator of life conditions largely through social moulding. Wittgenstein was of the view that all functional human beings share certain "natural" bodily reactions that express conditions of life. The most prominent examples he mentions are reactions to a bodily injury, such as crying when struck attending to a hurt bodily part. What makes these reactions 'natural' is that they are pre-linguistic *(Zettel* 541). This limited, biological level of natural expressivities forms the basis of an extended and extendable realm of culturally instituted expressions. Through social training and learning, we augment natural expressions with more elaborate bodily and linguistic expressions that manifest our living conditions. A new born baby can not be malicious, friendly, or thankful because these conditions become possible only in a multifaceted pattern of behaviour and relationships. A just-born baby is exposed not only to the physical world but also to a complex of symbols, signs and gestures which are the quintessence of a culture. A child's early interaction with others consists of non-verbal signals such as head-nods, eye-movements, tones of voice, facial expressions and mono-syllables which are expressions of attitudes, emotions, attentiveness and feedback. Here, it is not just a matter of adjusting to ready-made patterns of behaviour but of assimilating modes of life-activity which presuppose the capacity to endow meanings to our surroundings and our place in them. For example, mother brings some interesting thing to the notice of the child by pointing her finger towards it, and the child learns to point the object by her finger and bring it to the notice of the mother. Here, knowledge for the child is not simply a matter of taking notice of, but an interpretation of the symbol of finger-pointing. Once a child's repertoire of doings sufficiently expands to exhibit the multiplicity of further ascription of life-conditions, the lengthy process of learning through acting and speaking begins. This educational process involves extensive assertion, correction, ostensive definition, reference to paradigms, gestures of disapproval and approval, citation of rules, observation, participation, evaluation, and fresh attempts and so on. "Bit by bit daily life becomes such that there is a place for hope in it" *(Zettel* 469). We gradually learn to offer reasons for our reactions by making first-person explanatory uses of the locutions learnt by us. As our knowledge expands, as we acquire first hand familiarity with wider states of affairs, as our circle of friends and acquaintances enlarges, as we start taking an interest in even more activities and affairs, we learn to act within an enlarged set of contexts, situations, roles, institutions and practices.

Social training, especially training in language and other practical skills enables us to express what the natural bodily repertoire could not have achieved without such support. Although our capacity to express ourselves through bodily doings and sayings is socially instituted, each one of us exhibits a unique style of particular doings and sayings. This uniqueness is an evidence of our active individuality. An active individuality is achieved through participation in extant social practices. The process of formation of our distinctive human consciousness is mediated through our cultural practices. For us as individuals, these practices appear as complex webs of meanings which we tend to reify as if these exist independently of our participation in these practices. Wittgenstein reminds us that the people who are "us" are the people with whom "we can find our feet", more literally, the people in whom we can find ourselves. They are those with whom we share the language games that we have learnt and a kind of form of life. Becoming one of us, participating in our ways of speaking and acting is as far as most human beings develop. Some individuals, however, extend the range or boundaries of human doings and sayings in recognisably new ways. When this is achieved, these sayings and doings may differ in their insight and originality. This is evident from the creative achievements and contributions made by artists, thinkers, scientists, scholars and statesmen in different spheres of human life. It is possible for us to recognise and appreciate these achievements only from the vantage points which become available to us through participation in socio-cultural practices. Creativity and novelty can be seen as such and differentiated from what has to be assigned to the realm of the unintelligible in view of the logic of agreements common to human form of life. Human consciousness consists of our capacity to articulate self-ascriptions, our ability to notice and describe the mental life of others, our background convictions, and the bulk of our other doings and sayings. These features interdependently characterise us as individuals and show that we, as individuals, are interdependently linked with other individuals who can act and talk in mutually intelligible ways. Attempts to look for universal explanatory theories of human consciousness are unlikely to succeed as they tend to miss its reflexive, holist character and unique ways of its manifestation and working.

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BOOK REVIEWS

Pabitra Kumar Roy, *Kant's Concept of Sublime: A Pathway to the Numinous*, Decent Books, New Delhi, 2005, pp. 110, Rs. 200.

The book under review is the outcome of the author's research project and lectures delivered as a visiting professor at Utkal University. Amongst Kant's triad of critiques, *The Critique of Judgement* was written the last and Kant saw it as a bridge between the earlier two Critiques. Kant's delineation of the realms of nature and freedom had an unbridgeable gulf between them which, he realized could be filled only by feeling. Judgement is the faculty associated with feeling. It generates a new level of awareness that sees multiplicity in unity. It is on this aspect of judgement as a middle term between Understanding and Reason that Roy has mainly focussed in his exposition of the Kantian aesthetics.

Roy sees freedom as central to all the three critiques of Kant. He sees Kant as "a great *Acharya* of freedom". For Kant freedom consists in willing as one ought to, Kant defines a moral act as that which is an outcome of the autonomous will of an agent. Roy's interpretation of Kant is both exhaustive and deep. He has delineated the different dimensions of aesthetic judgement in terms of the experience of beauty and sublime and its relation to morality in great detail. His thorough understanding of Kant is clearly visible even in his Introduction. Referring to Kantian ethics he writes: "All morality is the relationship of the action to the universal rule. The essential part of morality is that our actions have their motivating ground in the universal rule. But the question remains how can the universal rule motivate the will? The problem lies in explaining how a rule of the understanding, conceived objectively, can motivate subjectively, i.e., become a principle of action. Kant is dissatisfied with his own explanation. He remarks that nobody can comprehend how the understanding should have a motivating power. The understanding can judge, but this judgement be given power so that it becomes motivational to impel the will on performance of an action   this explanation forces Kant back to the concept of moral feeling" (pp. 38–39). According to Roy *Critique of Judgement* precisely addresses this problem. He is aware that Kant does not regard moral feeling as the ground for morality because he was against bringing inclination as a deciding feature for action. Roy makes it clear that "for Kant moral feeling cannot be an objective ground, but it is the subjective motive for moral action." Roy is aware of the problematic character of the concept of moral feeling in Kant but he does not agree with John Andrew Bernstein's view that Kant's attempt to reunite feeling and morality is gratuitous and artificial. One can understand the reason for Bernstein's criticism of Kant because Kant himself had time and again emphasized the need to bracket out any concern towards one's inclination while making a moral choice. But Roy makes it clear that moral feeling is not inclination. It is through the experience of the sublime that one becomes aware of one's moral vocation. This experience makes one aware that moral law can generate a feeling of respect. Thus Roy gives a very convincing defence of Kant through his analysis of Kant's concept of sublime.

According to Kant the aesthetic judgement looks upon nature as displaying purposiveness without a purpose. Roy says, since we do not find this purpose any where outside us, we look for it in ourselves. We look for it in that which constitutes the ultimate purpose of our existence (p. 78). Thus the *Critique of Judgement* takes us from the objective view of morality given in the second Critique to the inner subjective vision of our moral vocation. For Kant virtue transcends personal inclination but it is through the experience of sublime that one experiences the majesty of the moral law. Roy sees the Kantian sublime as the pathway to the numinous. The gulf between phenomena and the noumena is only bridged by the aesthetic experience of the beautiful and the sublime. Roy's interpretation of Kant's aesthetics is very refreshing because it has a certain Indianness about it. Like a true Indian Commentator he has written a very innovative *bhāsya* on the *Critique of Judgement.* This is not to say that he is reading into Kant what Kant did not really say but he has certainly tried to give a very innovative reading of Kant that is supported by the different texts of Kant. For instance talking of Kant's analytic of the Beautiful he writes: "It would not be incompatible with the argument if we say that through the aesthetic experience we get a sense of timelessness in terms of our intelligible character as moral agents." He cites the following passage from Rabindranath's Gitanjali to substantiate this point:

> Time is endless in thy hands, my lord
> There is none to count thy minutes
> Days and nights pass and ages bloom
> And fade like flowers
> Then knowest how to wait
> Thy centuries follow each other
> Perfecting a small wild flower.

This is how we experience the noumenal world through the free play of our cognitive powers. Imagination creates a bridge between the phenomenal and the noumenal and makes us experience the oneness of *samsāra* and *nirvāna.* Roy has very convincingly argued for the position that Kant's philosophy is not a refutation but a legitimization of metaphysics. Roy contends that for Kant the sublime is not merely an aesthetic concept but a subject of metaphysical enquiry; a doorway between aesthetics and metaphysics.

The book is very well written, all those who are interested in Kantian thought would benefit from Roy's lucid interpretation of it.

REKHA JHANJI
Professor of Philosophy
Panjab University, Chandigarh

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Tan Chung and Geng Yinzeng, *India and China: Twenty Centuries of Civilizational Interaction and Vibrations*, PHISPC, New Delhi, 2005, pp. xxxiii+546, Rs. 2150.

Professor Tan Chung and Professor Geng Yinzeng have written a book of about 600 pages that discusses twenty centuries of the history of scholarship and study. This ratio may seem badly balanced but what the book finally gives the reader is a crystallization of research and study of countless scholars over these twenty centuries. Added to this are their own interpretations and conclusions. It is these aspects that leave the reader full of awe and admiration.

To engage in research and publication of studies is now an essential part of the education system. Scholars and teachers have always been in search of more and deeper knowledge but in modern times it is necessary to go through a systematic method of study and search. Modern methods have also organized knowledge into compartments leading to what is known as specialization. It is therefore, necessary for a scholar of any worth to be a specialist in a particular field. Generally speaking, management of training leading to research has a set of rules that are well known and followed universally. The UGC and other sources offer good fellowships to tempt and support researchers. In the field of science and technology the taxpayer and the UGC etc consider this money well spent which it certainly is. But in the field of social sciences the tempo starts slowing down. The number of scholarships is fewer and the rules for students to apply become less suitable and attractive. The justification by the funding organization being the slower and fewer number of successful research work coming from the scholars. This aspect becomes particularly sharp in the field of classical studies. The management of research in classical studies needs to be entirely different. The requirements for the kind of training for classical studies are not taken into consideration while framing general rules. The facilities needed by a researcher in classical studies are not the same as those of researchers in science and technology. There are problems faced by researchers in classical studies almost everywhere in the world. India prides itself in its traditions, its long history of cultural activities, its contribution to world cultures since ancient times. But the study of those times and the search into activities that develop civilization are done under the most difficult conditions.

A study or search into early history necessarily needs facility in the language of the times under study. Research on historical origins are based on the evidence existing which are mainly in the scriptures. Doctrines and ideologies develop gradually thus making a careful study of political and social history necessary. To be precise, when the civilizations of India & China, which are the subject of the book being reviewed, are to be studied, a knowledge of not only the social histories but also a knowledge of Sanskrit, Pali and Classical Chinese language are necessary. When the history of Buddhism in China is researched, a good understanding of Confucianism, Taoism and other schools of Philosophy in China as well as Hinduism, Jainism and other Indian philosophical traditions are required. Hence the scope and depth of time are important, even essential.

Tagore had envisaged this when he founded his Visvabharati. The courses were planned to fit and suit scholars studying various aspects of civilizational interaction. With regard to India's relations with her neighbours and civilizational interaction, Cheena Bhavana came into existence. The actual history of Cheena Bhavana has been well discussed in the book being reviewed, by Prof. Ji Xianlin as well as Prof. Tan Chung. Prof. Tan Yunshan's role, his efficient and dedicated work created the base on which scholars were to stand. The names of the scholars who worked and visited the library are also discussed by Prof Tan Chung.

While Cheena Bhavana became the center of research activity, one important contribution was made by one of the most well known scholars of India-China relations, Prof. Probodh Chandra Bagchi. He was Adhyaksha of Vidya Bhavana and later Vicechancellor of Visvabharati till his sad demise in 1956. Prof. Bagchi was trained in France in the field of India-China relations as mentioned in the book under review. Prof. Bagchi planned the courses in Vidya Bhavana, the object of which was to rear high school graduates into scholars for research in classical studies. That is, apart from the two year B.A. Degree courses which were prevalent those days, Honours courses were offered in Indology, Philosophy and Sanskrit. Honours courses consisted of eight papers and were taught over three years. Along with these eight papers, one Allied Subject was to be studied in the first two years, the standard to be equivalent to the Honours course, to be covered in three papers. There was a choice of Indian Philosophy, Sanskrit, Pali and Prakrit. With these specialized subjects one Subsidiary Subject, to be selected from a variety of the two year B.A. Pass course subject was to be studied, apart from the Compulsory General English and Bengali or Hindi language courses. Also open to all students were the part-time language courses, held in the evenings, like Chinese, Japanese, Tibetan, Persian, French, German etc. Thus an Honours student, for example in the Indology Department, who was trained in either Sanskrit, Pali or Indian Philosophy (which was taught from original Sanskrit texts) could avail of the advantage of studying Chinese, Japanese or Tibetan, leading to the basic training for research in Buddhism or India-China relations.

At the research level, scholars were registered for Ph.D. and were also assigned teaching work. There was some sort of funding that was considered suitable for a research scholar living in a simple ashram-like atmosphere. More or less the same was the vision for studies in the Benaras Hindu University. The scholar could engage in deep study with scope for publication of articles in research periodicals like the Sino-Indian Studies (edited by Prof. Tan Yun Shan) was not to be hurried, study was approached almost as meditation so that the scholars matured and could present a historically correct and philosophically properly analyzed piece of research work. Prof. K.V. Ramanan, one of the finest scholars to have worked on India-China Civilizational interaction, was able to publish his book on Nagarjuna's philosophy, a study of the development of Mahāyāna Buddhism, only after sixteen long years of study of original texts and scriptures in Chinese, Tibetan, Sanskrit and Pali.

But the basic factor of funding in such cases later became the position of the scholars as professors and teachers. Well known scholars like Prof. Ramanan were of course invited to lecture and research in universities like Beijing, Tokyo and Harvard for short periods of time. (Strangely the book being reviewed here has missed even mentioning his name). Unfortunately for young research scholars of this period two things happened almost simultaneously; the only funding authority of Indian universities became the UGC, which framed general rules for eligibility for funding. Rules for classical studies were the same as for science & technology or those for social sciences and classical studies. Potential researchers had no way other than applying for teaching positions. Benaras Hindu University, Visvabharati and Calcutta University are a few examples of how they faced setbacks due to the UGC's preposterous rules by which appointment of teachers was made in ratio to the number of students. In practical terms this boiled down to sixteen papers (eight for B.A. Hons. and eight for M.A.) taught by four or even less than four teachers. Obviously research came to a complete standstill. Along with this, withdrawal of funding for research and withdrawal of funding for publication of research journals also took place. Counseling of young students at the pre-degree level was also not available.

The second and very important factor was India and China relations facing a sad setback. China's academic community also suffered during this period when the chaos of postcolonial China was being organized and the construction (jian she) of a new China became the first aim and object of the Chinese people. Once this was done, China is now going back to its traditional love for classical studies. China, today, is also fortunate to have a leader like Professor Ji Xianlin for their research programmes. Slowly and carefully they are publishing their work in the field of India-China relations. For instance, Yu Longyu and others have brought out *Indian Classic Works and Chinese Classics: Indian writers* and *Chinese culture,* published by Ningxia Peoples' Publishing House in 2004.

This is an unusual book with a lot of information on Indian scholars working on India-China relations, somewhat similar in content to the first few chapters of the book being reviewed here. In this book there is a chapter devoted to the contribution of Professor PC Bagchi. Sadly, Prof. Tan Chung only mentioned the name of PC Bagchi.

In the Foreword while writing about common characters of our culture Professor Ji Xianlim has, in his very poetic style of writing, presented the idea of sharing the same mode of thinking which, he says, is comprehensive in the eastern world and analytic in the western world. He further says, "India and China consider the universe/nature to be our intimate friend". A concrete example of such a western thought can be found in Edmund Hillary's mode of thinking when, in his book describing his exhilaration on ascending Mount Everest, he compares it to "conquering the monster" whereas to the people on both sides of the Himalayas, the beautiful mountains represent the very image of gods. The Everest is a *devatā* to be revered and loved. When European scholars "discovered" the tombs of the Egyptian Pharaohs, dug out the carefully preserved bodies that had been placed in structures planned so that the body could lie in eternal peace and privacy, one can see their attitude.

On page 49 Professor Tan Chung has mentioned "*fei lai feng*" hill and interpreted it as the hill that has flown here from India. He has also referred to the myth of *Gandhamādan* (page 86, 153) and the absorption of the concept into Chinese mythology and scriptures. In this context one may mention the experience of a young Indian student visiting Hangzhou forty-five years ago. She stood at a spot on the grounds of the Buddha temple, which was a three feet by three feet size island on a little rivulet. The expression *fei lai feng* was used by the Chinese guide and was explained as (*feng*)breeze that blew in (*fei lai*) from India, at this particular spot. An old lady, a devotee, asked the student, "Can you not feel the fragrant sandalwood breeze from India?" On a personal level this will remain one of the very beautiful examples of civilizational interaction. This highly poetic and much loved use of the *candan—surabhita samīraṇa* of our *kāvyas* is one interaction of our two cultures. Another is the personality of *Hanumān* which is reflected in Xiyouji's character of Monkey mentioned on page 51. Prof. Tan Chung has given innumerable such instances of interaction, each one thought out and discussed in good detail.

Added to the inherited similarity of attitude and interchange of many of our ancient ways and traditions, is the love that the two authors feel, as the result of their lifelong association with the people and familiarity with Indian thought and emotions. This has been analyzed and discussed in detail in the book. Their perspective of India can be, to an Indian reviewer, a typical characteristic of Chinese civilization and culture. A vast land endowed with the richest of natural resources, a civilization was evolved based on knowledge and study of the natural and physical sciences. Parallel to development of this material wealth a culture of engagement in abstract thought flourished. Thus a combination of the practical and the poetic is what China was and will always be. This combination is, as it were, visible in the presentation of the contents of the book being reviewed. Prof. Geng has presented the data and source material while Prof. Tan's part of the presentation reflects the love for poetic expression and interpretation. The interpretation is brilliant, sometimes very interesting. One cannot but enjoy observing the point of view of another civilization, parallel though we are! On page 204 after discussion on Mengzi's comment on Mozi, of "rubbing the head and placing on the heel", Prof. Tan Chung says the idea has puzzled him but he found an explanation in the Indian practice that we know as *praṇām.* In his eyes the rubbing on the head is more important than the Indian idea of touching the feet of an elder in order to take the dust, what we call "*padadhuli*", to smear it on one's forehead and head as an expression of reverence. On page 15 his translation of "*gurudeva*" is literary correct but not really correct. The concept of *deva* assumes godliness in all living things and not limited to gods of, for example, mythology. Incidentally the term *Gurudeva* before Tagore's name was first used by Gandhiji when Tagore and Gandhi first met. Tagore really did not like being addressed thus and has written about it. Tagore was, as his poems have expressed again and again, himself a man of great humility. He also believed in the Indian tradition of the idea of a person to be modest and humble, known as *Vinay* in India, an ideal very well known and practised in China too. This idea of *Vinay* is so well reflected in the entire work of the two authors. The enormous work that they have done, nowhere expresses smugness or even justified satisfaction.

The readers, shall feel happy to read the message from Honorable KR Narayanan, former President of India, who has perfectly expressed their own feelings. Prof. Tan Chung and Prof. Geng Yinzeng take the readers on a long journey. And the readers have for company the two authors' deep love for India and China. Prof. Tan Chung's depth of knowledge enriches the world of thought. Prof. Geng's work is unique in that presentation of the chronology of events, the source materials listed and method used is so thorough that it gives a researcher every possible piece of information. A veritable *bai hou da lou* (a hundred goods under one roof) of information. In chapter 10 on Source Materials she has classified them under Abbreviation, Chinese Title, English Translation and has also given a very useful introduction to each work on the list. This is excellent and her interpretation is invaluable. Giving the Chinese characters for the names and terms is particularly useful, so is the romanization of names. Prof. Tan Chung's portion would have been further enhanced had he also used Chinese characters. In the book, tone marks for the romanization are not used and to a non-Chinese reader it would have been of use and interest. Prof. Geng's chapter on Pilgrims gives the Indian Name, the Chinese Name, Duration of stay in India (a very useful statistic to have on hand), followed by a brief Biographical account.

In this context one would like to mention that the book being reviewed has nowhere mentioned Smt. Latika Lahiri's book on "Chinese Monks in India" published by Motilal Banarsidass in 1986 from Delhi.

The Additional Bibliography of the book under review is useful. Selective Glossaries of first Sanskrit vocabulary and II Chinese Vocabularies are excellent, the Sanskrit part has a *devanāgari* version with the Chinese characters. This is a priceless collection and speaks of how much hard work and thought that went behind planning and writing this part of the book.

The Centre for Studies in Civilization needs to be thanked and congratulated for publishing the volume. China's role as a neighbour and friend is discussed with valuable insights in this History of Science, Philosophy and Culture in Indian Civilization.

REENA GANGULY
Professor (retired)
Department of Chinese Language and Culture
Cheena Bhavan
Visvabharati University
West Bengal

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Margaret Chatterjee, *Lifeworlds, Philosophy and India Today*, Indian Institute of Advanced Study, Rashtrapati Nivas, Shimla, pp. xxii+72, Rs. 150.

The book, although only 71 pages, is a work of grand and complex dimensions. In this remarkable work, Margaret Chatterjee has brought out some insightful and fascinating vistas offering glimpses of her concerns with our contemporary situation which demand our immediate attention. These aspects are multi-culturalism, violence and religion. She makes use of the term Lifeworld which has been used by both philosophers and social scientists to explicate these issues.

The notion of Lifeworld, as is primarily associated with Edmund Husserl, has indeed thrown open in philosophy and social sciences an arena of possibilities. Husserl defines lifeworld as something pre-given, constitutive and self-evident revealing itself in our activities, in our everyday life and so on. It is within lifeworlds that diverse traditions are embedded. This important concept of *Lebenswelt* became integral to Husserl's exposing of the manifold expressions of human living and the rooting of these in a thoroughly concrete environment. The term 'lifeworld' is used according to Husserl in both the singular and the plural. The concept of *Lebenswelt* on which Husserl's thinking was based experienced different stages over a period of years which is evidenced by his notions on intersubjectivity, historicity, universal constitution 'lifeworld' as intertwined with science in a dual sense, etc.

Without the lifeworld, there could be no science that is foundational, in a real sense. At the same time, lifeworld is technologically laden. Relativization of lifeworlds was Husserl's starting point. Thus the concept of lifeworld which Husserl extensively used towards the end of his philosophical career was thrown up by him as a challenge to the claim of modern science regarding the finality of their method of investigation. We can now speak of directly acquired structures, modes of cognitions to which various individuals, communities, ethnic groups may remain attached. The Lifeworld of a community, the impressions arising out of a community's primal and day to day encounter with the world are the stuff around which that community's philosophy lies woven. There are natural and cultural entities, fragments of experiences lived by the community anchored in a specific 'space of history' and the physical world given to it by its context with its surroundings and situations. Margaret Chatterjee deals with various issues and relates them to the philosophers' concern. She speaks at length on how traditions are cumulative and contain important strands of dissidence and resistance. According to her the claim to possess 'higher' knowledge should not be used to promote a backward looking ideology. Instead, what is of importance to her is, regarding the individual as the bearer of human dignity and inalienable rights, non-toleration of ethnic or racial oppression, maintain child dignity, women dignity and the dignity of the disabled, torture and persecution to be erased from society and genocide to be treated as a crime. Philosophers have not the least concern about the hostility and conflict situations. Lack of concern on part of philosophers in the phenomenon of clash of consciousness is quite evident. Collision of consciousness can thus become spread to communities. The need of new lifeworlds to be constructed in harshest condition is the need of the hour. Philosophizing by looking at things around us in a multicultural society like India is very important according to her. The concepts *Moksha* and *lokasamgraha* should be made compatible to each other by taking into consideration economic, social and political issues. Cultural change is open to self critique and to critique by others. Consciousness would grow laterally and horizontally turning our attention to indifferences, anomalies and lack of sense of priorities.

It is true that today we live in multicultural circumstances which situate us in complexity. These complexities lead us to many-coloured pluralities. At the same time, we are tossed into the complexity of the problem of identity. However, what is intrinsic to liberal democracy on being what one is and not something else is where individualism plays its vital role. Each individual's opinion is of value because every individual is of value. The contradiction is between the noble legacies of autonomy which is derived from pluralism. In such a situation, multiculturalism plays a role in bridging the gap between our pluralities. Science on the one hand and liberal democracy on the other hand have flaws in them in terms of application and performances. At the same time, we see that we exist in an unequal society. This is where Margaret Chatterjee tries to bring into our focus that cultures are the result of our circumstances, interactions and growth. The difference between cultures does sometimes become displaced and transformed resulting in multicultural societies where processes of negotiation and renegotiation and pockets of resistance take place. Margaret Chatterjee through various interesting examples and live experiences shows how in a multicultural society the 'meanings' of archetypal experiences run deep and saturate many layers of consciousness. In our day to day experiences, we see how our own personal history intersects with history in its socio-economic and political dimensions. The result is that a democratically minded public opinion is not heeded; policies of doubtful ethical value are accepted only if they succeed. Media is responsible for distortion of all kinds. International bodies also prove to be futile in curbing power. Thus a communitarian finds it difficult to accommodate a multicultural idea.

Margaret Chatterjee is clear when she says "a harmonious multicultural society, I assume is one in which no single component regards itself as superior to another". As a result, in a multicultural world, constant accommodation is called for. This struggle for making lifeworlds and multicultural worlds is a time consuming experiment, but is worth it.

One of the main factors in a lifeworld situation which hampers multiculturalism is violence. The impact of violence on lifeworld is quite terrible. The cultures of violence are plural and what is involved in violence is dehumanization. This obviously leads to the moral collapse of society thus leading to degeneration. Violence is seen in societies where there is a population increase; deterioration in living conditions, deprivations of extreme kind, defaults in the working of bureaucracies etc. A number of exciting examples are discussed in the book to explicate this point. In an attempt to remedy injustice perpetrating some other injustice is seen. One such example is the reservation policy introduced to help the deprived sections. This had led in India to cases of self-immolation on the grounds of indiscriminate justice. While violence is inevitable in a democratic setup or any other, embedded in social, political and economic life it is pertinent to say that prompt diagnosis should be then to identify violence and remedial action both on the part of the public and the administration has to take place.

It is often thought that religion forms important glue for the cohesion of societies, whereas, it is often seen that religion is the main cause for expression of violence.

Margaret Chatterjee is surely right in bringing out few issues about how religion seems to be playing a vital role in either enhancing violence or curbing it. There are other factors like catastrophes, historical legacies, factors stemming from break up of empires, economic scarcities and rivalries, revolt of oppressed sections of societies etc. We also see that communities have lived amicably side by side over centuries. However, in some societies, the authorities fail to anticipate trouble and thus provide space for increasing violence in view of religion. This leads to terrible violence. Finally violence also erupts through the exploitation of communal feeling in order to gain the support of those who are shortly to face elections.

Nevertheless, the most important thing is to question as to why religion lends itself to instigate violence and get it exploited. The nature of religion itself implies that violence cannot be ruled out as there is an inbuilt fanaticism and the claim of unique possession of truth. This leads to the divisions between 'us and they'. There are passages from scriptures justifying violence although interpretations could be given referring to inner struggle. Finally, we need to see how and when multiple cultures of violence are regarded as society's everyday performances—which lead to culture of violence as uncontrollable. Powerful vested interests control economic and political network both nationally and internationally. Thus, there is evidence of fundamental disagreement about the need to bring an end to the culture of violence as ideologies justifying violence flourish. Further, analysis according to the author leads us in finding that the nuclear threats and the ins and outs of globalization lead to terrible consequences. If violence is implicit and leading to conflicts of different kinds, it is inevitable to have religious and social harmony.

In the last chapter, Margaret Chatterjee appears to make a suggestion that religion on its own is not something that can work either for or against social harmony because it is not to be found divorced from economic and political factors. She also brings into our focus how social harmony exists in some societies where we find amicable relations among people of different faiths, a healthy communication which prospers through trust, honesty and fair dealing.

At the same time, Margaret Chatterjee emphasizes the fact that there is a role of religious adherence in promoting self affirmation and providing a social nexus through establishing practices with bond groups. A religious community, however, challenging both the private and public domains by its claim to authority leads to diverse opinions. Thus religion is seen to offer opportunities for life-enhancing experiences at both individual and social levels. It would seem that religion both links and separates people. The rise of dissenting sects resulted in producing social harmony later on. This leads Margaret Chatterjee to talk of two very distinctive thinkers, namely Alexis de Tocqueville and Mahatma Gandhi. While Tocquivelle believed that family, religion and democratic political participation serve to moderate individualism in American life, Gandhian view was that certain elements in the religious impulse serve to moderate the opposite of self-conscious individualism. According to the author, de Tocqueville looks upon religion as a tempering influence on what he regards as a tendency towards obsession with 'well-being'. Further, the author appears to affirm that in a Hindu society, caste could be taken as a particularly successful example of how religion or rather more properly quasi religious elements in a cultural complex can promote harmony. As it is seen that caste plays a significant role during elections. After attempting at giving a detailed analysis of the society, she states that religious identities compete with linguistic and regional affiliations and, therefore, legislative policies have overturned social boundaries and created new opportunities. These can give rise to 'new conflicts' some of which appear in the guise of religion but which on closer inspection are not really such. Secondly, the author affirms that the electoral mechanism and the government policy of reservation of a quota of government posts of SC/ST have jointly led to the sudden promotion of those at the bottom of social scale to positions of high status which has caused resentment among caste Hindus who are at a disadvantage in the job market.

The author is trying to explore what religion has got to do with a cluster of issues, like the injustices faced by the underprivileged and the resentment among the minorities like Muslims, Christians and Buddhists.

Here she suggests that economic deprivation should be the criterion of positive discriminatory measures to remove any hint of a religious or quasi religious element creeping in.

It is, therefore, seen that the Hindu Life-world lays particular emphasis on individuality which Margaret Chatterjee has divided into three ways. (i) The concept of *swadharma*—one's own particular path of ethical living. This idea affirms and legitimates individuality to the extent of reconciling it with the institution of the *guru*. The notion of a conflation of path and goal and a value set on stability and equilibrium. (ii) The second way in which individuality is recognised is through the concept of *istadevata* which literally means 'one's own God'. This rules out trying to influence others to opt for a different god or 'convert' to a different path, thus enabling to seek truth as inexhaustible.

The third feature of the Hindu way of life is the concept of *moksha* or liberation seen as an individual quest. The understanding of liberation taking into consideration Gandhi's views includes transformation at the economic, social and political levels. The concept of *satyagraha* by which one achieves freedom on a national level is a good example. According to the author, national struggle could become a vehicle for nourishing social harmony. Gandhi's concern, according to her, was the need to transform the individual impulse towards a transcendental goal into the desire to transform society and furthermore transform solidarities into the wider solidarity of the nation. This in fact leads us to explain how multiculturalism and very diverse heritage can contribute or fail to contribute to social harmony.

Here we should know that the multicultural situations in which we are placed lead to and the possibility of social harmony. Margaret Chatterjee speaks of three different contextual situations. (i) Indian situation where the society is a fact of history, (ii) American situation where the society virtually emerged due to immigrants, as original inhabitants were very few comparatively, (iii) societies where the influx of immigrants is a recent phenomenon.

Religion plays a very important role not only in the global situation but also at the micro level. The motives and the causes of immigrations may be diverse. But what is normally seen is that religious institutions provide foci for community identity. Through the religious institutions—social harmony takes place. Boundary crossing is a matter not just of opting but which is being accepted. The sense of toleration has been seen in such situations where religious practices are observed and appreciated by different races of people. The major hindrances set up by religions according to Margaret Chatterjee were (i) exclusive accounts of truth especially the notion of *The Truth*, (ii) Provocative vocabulary, (iii) Provocative rituals, (iv) Provocative situations, and (v) Memories of catastrophic situations. At the same time, religion plays a conflictual role in association with politics. Although there are many kinds of 'otherness' including the area of religion like 'culture', 'gender', 'race', distinction between rich and poor, privileged and under-privileged, toleration; Negotiation, Compromise and Education are alternatives to replace a discourse of rightness and wrongness. Margaret Chatterjee turns our attention to the thought and practice of Mahatma Gandhi who tried his best to reconcile religion with social harmony and went beyond the limited scope of tolerance. He was well situated to be aware of the religious 'othernesses'. But for the Indians there has never been a need of defining themselves vis-à-vis others. Since they resorted to two strategies namely, assimilation or stick on to watertight compartments. At grass-roots level Gandhi's quest, argues Margaret Chatterjee, was to see perfect social harmony. He was anxious to enlist people of all religious persuasions or none. Nationality for him was the basis of a free and equal polity of nations, an international order.

In conclusion, Margaret Chatterjee winds up by stating that the relation between religion and social harmony is an on-going debate. The reason is because of the differences in the situations faced in different parts of the globe. According to her, social harmony is not impossible to attain. She brings in three main features, namely, the growth of moral conscience as a breaking in of transcendence in the ethical-religious sphere, yielding to a sense of responsibility towards the animal world and environment. Secondly, as she sees certain religious ambience imparting an unmistakable flavour to secular consciousness which means in our contemporary life shifting from ultimate reality to ultimate concern.

Finally, the way in which religion has made a tremendous contribution to social harmony as is contained in the very aesthetic connotation of the term 'harmony'. This small piece of work may be said to be quite significant because of Margaret Chatterjee's clarity of thinking on a multi-directional content. In all the four chapters, the author has herself provided examples to explore into the various themes and issues in phenomenology, social and political philosophy, ethics, philosophy of religion and contemporary Indian philosophy. By doing this she has cultivated a philosophical reflection which moves on the borderlines between phenomenology, social concerns and religion. This gives to her writing, the power of something alive and new.

The work on the whole makes a very interesting reading and enables us to look into the concerns and commitment of a thinker of our times for whom philosophical activities are not confined only to pure intellectual and theoretical issues but also the more practical aspects of society in which we live.

MERCY HELEN
Director, Planning and Research
Indian Council of Philosophical Research
New Delhi

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REPORTS

Workshop on Life and Organicism, India International Centre, New Delhi, 13–14 December 2004

A two-day workshop on the PHISPC's proposal to bring out a volume entitled "Life and Organicism" was organized at India International Centre, New Delhi, on 13 and 14 December 2004. There were twenty-four participants including 7 from outstations (Bangalore, Jammu, Kasargod, Kolkata). Eight of the eleven invited authors of the six proposed chapters, a nominee of an absentee author, and all the fourteen invited discussants deliberated in seven sessions. The deliberations have been tape recorded.

All the authors had sent an abstract of the requested chapter or sections of a chapter far in advance of the workshop. The abstracts were provided to all the authors and discussants several weeks before the workshop to facilitate preparations toward in-depth discussions during the workshop. Six of the discussants had also sent notes on certain topics related to the proposed volume; these were also provided to all the participants during the first paper presentation session.

Prof. D.P. Chattopadhyaya, Chairman, CSC, and General Editor, PHISPC, was the Chief Guest, and Prof. B.V. Subbarayappa was the Chairperson for the inaugural session. As Director of the workshop Prof. N.S. Rangaswamy welcomed the Chief Guest, the Chairperson, and all the participants. He briefly stated the purpose of the workshop, and requested the Chairperson to conduct the proceedings. Prof. Subbarayappa made brief remarks about the PHISPC and the workshop, and requested the Chief Guest to deliver the inaugural address.

In his address Prof. Chattopadhyaya outlined the activities of the PHISPC, stressed the fact that the PHISPC publications are multidisciplinary, and aim to present the history of Indian Science and Philosophy in the broadest sense but without losing the global perspective. Furthermore, he said that the volumes are addressed to the educated laity, and not to the specialists or students. He then made suggestive references to the works of Charles Darwin, Ernst Mayr, Needham, Aurobindo, Jawaharlal Nehru and several others. Prof. Chattopadhyaya informed the participants that the PHISPC had already brought out 37 volumes and monographs on diverse topics and over 90 volumes were envisaged to be published by the year 2010. And many of the volumes are in the pipeline.

Prof. Subbarayappa made anecdotal remarks about Copernicus and other selected celebrities of science and emphasized the importance of history of science in our understanding of modern science in its correct perspective.

After self-introduction by the participants, Prof. Rangaswamy thanked Prof. Chattopadhyaya, Prof. Subbarayappa, and all the participants especially those from the far off places. The inaugural session ended over a cheering cup of hot coffee/tea.

Soon after, the paper presentation session started in earnest. Professors K. Muralidhar, K.V. Rao, A.K. Koul, Renee Borges, S. Duraiswami and T.R. Rao chaired the sessions,

The first session opened aptly with the topic *Origin and Diversity of Life.* Prof. T.R. Rao (University of Delhi) gave an explicit presentation. He dealt at length with the views of eastern and western philosophers, and the religious beliefs about the origin of life. He pointed out that without exception all religions believed that life on earth is an act of divine creation. With the advent of Darwin's theory of evolution, the theme of evolution through natural selection *versus* divine creationism was seriously debated. It is gratifying to note that unlike some universities in the West, especially the southern USA, which upheld the biblical genesis of life and opposed Darwinism, in India, although the views of fundamentalists often gained importance, the Darwinian evolution as a topic of biological science has not been opposed or banned.

After a brief description of the formation of the universe, the solar system, and the Earth, Prof. Rao presented historical data to account for the present age of the universe as 6.29 billion years, which estimation is interestingly the same according to Manusmriti. Prof. Rao commented on terrestrial and extraterrestrial sources for the origin of life, presented philosophical and scientific aspects about definition of life, and cited viruses and robots as cases which render an exclusive definition of life difficult. He then analyzed the available data to provide reasonably acceptable answers to the three prime questions—where, when, and how did life originate? After explaining the three types of transpermia in elucidating the origin of life, Prof. Rao dwelt on the diversity of life, and said that Nature has experimented and has come up with many kinds of body patterns and anatomical designs.

In her catchy narration Dr Renee Borges (IISc, Bangalore) focused on the biogeographical history of India to develop the chapter on *Evolution*. India has an exceptionally rich and diversified flora and fauna, and exhibits complex composition, character and affinities. Because of its unique origin as a breakaway landmass from Africa, and its subsequent connection with the Asian plate, the genealogy and phytogeography of India's biota can only be understood in comparison with elements from the African, Eurasian, Chinese and Malayan realms. In particular, the historical biogeography of India is drawing attention because of the realization that the rafting continent may have provided a means for the movement of organisms between landmasses. The "out-of-India" hypothesis may be relevant to an understanding of the distribution of flowering plants and vertebrates such as lizards and amphibians. Dr Borges illustrated Indian examples to highlight the important evolutionary patterns and processes. Her account covered a sweep from early ideas to those of the genomic and now the postgenomic and proteomic era, and ended with current ideas about the role of genetic determinism *versus* phenotypic plasticity in the development, ecology and evolution of plants and animals. Also, the nature of the conflict between religion and evolution was pointed out.

With the help of exquisite illustrations Dr Sanghamitra Sengupta, nominee of Prof. Partha Majumder (ISI, Kolkata) gave a vivid account of *Human Evolution.* She stated that protohumans (the homonid line) arose 7 million years ago. The various intermediate lines leading to homonid line have been constructed on the basis of fossils. Dr Sengupta traced the evolution of the genus *Homo.* The first species of *Homo, H. hamilis* had a cranium size of 600–700 cc. The species *H. erectus* had a cranium size of 800 cc; the species spread out into Asia and Europe, and were regular users of tools. Fossils of *H. erectus* found in Java have been called Java man. Anatomically the modern human, *H. sapiens* arose in East Africa. *H. sapiens* has a cranium size of 1200–1400 cc. Dr Sengupta explained the different models of origin of modern human, and presented evidences to prove the Uniregional Model the best model. According to this model the modern human originated in Africa and migrated in different directions to other parts of the world. Finally Dr Sengupta elaborated the available genetic data, especially the exclusively maternally inherited mitochondrial DNA (mDNA) data to support the Uniregional Model of origin of modern human. India occupies centre stage in human evolution. The Indian mDNA haplotypes fall into 36 groups. Discussions on the origin of the male and the female of the human focused the point that endocrinologically the male is at best a failed female.

In the next session Prof. Kakatkar Vasudeva Rao (formerly of the University of Delhi) spoke in great detail on *Cultural Evolution—Perspectives and Problems.* He broadly defined the term culture as the complex whole that includes knowledge, art, morals and other social accomplishments developed for a happy life in the world and thereafter. With the growth of human knowledge culture evolves in an attempt to achieve perfection. The Indian tradition of philosophical debates has helped maintain a steady growth of knowledge. Logical validity is the criterion of acceptability of any theory in philosophy.

The distinguishing feature of Indian culture is spirituality and theism. Spirituality assumes that the ultimate truth is mind or spirit and not inert matter. Acquiring knowledge of Self, the spiritual part of human being, was therefore considered the supreme learning. Ancient philosophers considered that the Self is a nonphysical entity that transmigrates in the cycle of rebirths. On this basis an elaborate theory of fate was developed to account for the individual's fortunes and miseries. Although the doctrine of karma and a nonphysical soul was generally accepted by most schools of Indian philosophy, the Cārvāka school rejected the idea pointing out that the living principle (*caitanya*) is an emergent attribute found in living bodies.

Prof. K.V. Rao explained that the concept that Ego (consciousness or the feeling of I *versus* all else) as the perceiver-cum-performer has provided a cue to extend the knowledge about Self on scientific basis. Neurobiological evidence suggests that Ego acts as the central coordinator of perception by the sense organs and responsive actions by the organs of action. Neurobiologists have elucidated the process of perception and responses. The different parts of the human brain that receive the signals from the sense organs and send signals to the organs of action have been identified. Responsive actions are not merely mechanical reflexes. There is considerable internal processing of the incoming signals. Memory and previous experience modify the responsive actions. In fact all aspects of subjective experience and human behavior, such as morality and social etiquette have been shown to have a neuroanatomical basis. That the thalamus in the brain is the neurobiological correlate of Ego is rapidly gaining strength.

Ego is developed postnatally. A newborn baby has functional sense organs and exhibits some reflexive actions. Exposure to a rich variety of stimuli and gradual modification of responses engender the feeling of one's being a perceiver-cum-performer. Objects handled by the baby (toys, mother's body, and so on.) aid this process. When the infant is about a year old, the feeling of I *versus* all else is already established. Child-like play and acquiring linguistic ability help building up the feeling of being a specific individual. Observations on identical twins and allophenic mice (experimentally produced genetic mosaics) have shown that Ego is not inherited by the process of Mendelian inheritance.

Ego develops further to superego, which is an idealized self conforming to a role model. This occurs mainly during adolescence although it may change subsequently. Social milieu shapes the superego. In a society wherein bonhomie is dominant the development of superego is conforming to martyrs, philanthropists, artists and so on. Superego acts as a built-in policeman in the personality of an individual holding him/her back from immoral activity. On the contrary, in a society wherein swindlers and scoundrels seem to be 'successful' individuals, adolescents are likely to take them as role models, thus leading to cultural degeneration.

In concluding his presentation which captured the rapt attention of all the participants Prof. K.V. Rao referred to *karmasiddhānta.* In Indian philosophy the doctrine of karma has been the foundation on which social morality is built. But the current scientific knowledge has rejected the whole of *karmasiddhānta* including the assumption of a nonphysical soul. Inasmuch the doctrine of karma finds no scientific support, does our society face the danger of being sucked into a black hole of immorality? This fear is unfounded. Social engineering ought to be guided by the Vedic concept of a cosmic order of harmony that applies to the whole universe, from the microcosmic to the macrocosmic level. Scientific research is comparable to the epic churning of the ocean. Science reveals truth that is morally neutral. Complemented by the Vedic concept of cosmic order application of scientific knowledge gives us the wisdom to use modern technology in a manner that does not disturb harmony.

One session was devoted to presentations on *Thermodynamic Perspective of Living State* by Dr P.K. Roy (NBRI, Gurgaon), *What Organisms Do* by Prof. K. Muralidhar (University of Delhi), and *Human Brain and Mind* by Prof. M. Gourie-Devi (Institute of Human Behavior and Allied Sciences, New Delhi).

While introducing his topic Dr Roy stated that thermodynamics has been rightly regarded the gift of biology to physics, as the principle of energy flow was discovered by physiologists such as Meyer and Helmholtz while studying the source of animal motive power. He explained that statistical functions are a basic feature of biological systems. The increased organization and activation of a biosystem are associated with increased entropy production or energy dissipation; and the dissipative formalism furnishes the broad quantitative principles by which biological systems display self-organized functioning, activation, progression and information transmission. A biothermodynamic methodology elucidates the rise of system activation and processing at different levels: progression across cellular level (metabolism), progression across brain development (systems level), and progression across behavioral development (cognitive level). Thermodynamics and its offshoots, namely information theory and nonlinear dynamics, offer a decisive and unified methodology to understand the function and behavior of organisms in different conditions and in divergent echelons of bioorganization, from cellular to cognitive.

Prof. Muralidhar discussed the subject *What Organisms Do.* He explained in an extraordinarily simple and lucid style that organisms grow, reproduce, and store and utilize energy. As a prelude to his discussion he briefed about the reductionist view of biology influenced largely by the ideas of Rene Descartes, and organismic biology or organicism.

Prof. Muralidhar highlighted that organisms function in a coordinated way. And the most important component of this coordination is communication between the organism and the environment on one hand, and among the internal tissues and organs of the organism on the other. Communication is both physical (light and sound) and chemical. Human species is unique in that both communication and coordination have evolved to the highest degree among all organisms. This includes language and self-consciousness.

Growth is increase in volume and number of units called cells. Increase in number of individuals is reproduction. For unicellular organisms, growth and reproduction are two sides of the same coin. For multicellular organisms, growth refers to processes within the organism leading to increase in cell volume and/or cell number, whereas reproduction refers to externally manifested multiplication of the whole organism.

Organisms reproduce their own kind. Reproduction is transfer of genetic material. Organisms do mechanical work (transport, locomotion, movement) and assembling work (biosynthesis)—assembling complex structures from simple structures. They utilize energy to perform work.

From a reductionist point of view organisms are made of chemical compounds of varying sizes and structures. These compounds are constantly being transformed into smaller or bigger molecules. This process is called metabolism.

The ultimate source of energy for all the works which the organisms perform is food. The nutrition requirements vary. There are organisms which given a single source of carbon and a single source of nitrogen manufacture all other compounds. There are others which require premade compounds such as amino acids, fatty acids, vitamins and so on.

All physiological and behavioral processes have an underlying chemical/metabolic basis. In health, this metabolic network functions perfectly in rate and direction. Defects in underlying processes lead to unhealthy conditions or diseases. Many diseases have genetic basis and this trait can be inherited. One of the most puzzling aspects of living process is the incorporation of the dimensions of time and space in all processes especially development. Morphogenesis appears to be spacially and temporally regulated.

Prof. Muralidhar concluded his presentation with a reference to 'lifestyle' diseases. Modern lifestyle has precipitated 'lifestyle' diseases alluding to the fact that living process is a highly interacting and evolving system. Biodiversity in form and function appears to be the result of an open-ended evolutionary process due to the interactions. What is mysterious is that genetic material carried a blueprint not just for form and pattern but also for interactions which result in unpredictable new orders and creations.

In the absence of Prof. Gourie-Devi, Dr P.K. Roy briefly presented the chapter *Human Brain and Mind.* He read and explained Prof. Gourie-Devi's abstract of the chapter and answered a volley of questions. The following are the take-home lessons.

Brain, an extremely complex structure, yet to be fully understood, can undisputedly be considered the master controlling a range of functions. The brain determines and regulates not only bodily activities but also the elaborate cognitive behavior such as memory, learning, judgement and emotion.

The human brain has evolved through a process of natural selection over many centuries from the primitive to the mammalian and finally to the human brain with a large mass of neocortex. It is perhaps through the myriad functions of neocortex that the human species has gained supremacy over other species and acquired mastery of many complex skills unique to the human.

The two hemispheres of the brain function harmoniously in close relationship due to intrinsic nerve fibre connections. Split brain studies by disconnecting the two hemispheres, and numerous other experiments have demonstrated that the left hemisphere is logical, systematic, and controls verbal abilities. And the right hemisphere is intuitive, imaginative, and is concerned with emotion and spatial perception. Thus any damage or disease of a hemisphere would result in loss of the specific functions.

Where does consciousness arise and what are the hypotheses to explain consciousness have been the subject of intense debate and discussion. The realm of consciousness transcends neuroscience to metaphysical, philosophical and spiritual dimension.

One of the sessions engaged the participants in a discussion of *Biology and Biotechnology for Human Welfare, History of Medical Research in India*, and *Philosophy of Biology*. Dr Manju Sharma (formerly Secretary, DBT) could not attend the workshop. One of the discussants Dr R.D. Iyer (formerly of the CPCRI, Kasargod) discussed Dr Manju Sharma's chapter, and added notes on our heritage of knowledge on agriculture, forestry, and arboriculture from the ancient and medieval texts, namely *Krishi Parāshara*, *Kashyapiya Krishisukta*, *Vrikshāyurveda* and *Vishvavallabha*. The following summary points emanated from Dr Manju Sharma's write-up. Biology and biotechnology have become highly skilloriented and knowledge-based areas of research, development and application. The field of modern biology has had major impact on agriculture, healthcare systems, environment and industrial growth. The vast potential of the field of biology and in particular biotechnology is being realized keeping in view the global concerns about food, nutrition, health, environment and livelihood security. Food production is the largest worldwide industry continuously generating new food technologies with the advent of modern biological knowledge and techniques of bioengineering. Application of rDNA methods would completely transform not only the availability of food but the quality and its value from the nutritional point of view. Biological interventions would enhance crop architecture and would help retention of the soil fertility. Researches on malnutrition, low birth weight babies, several emerging and re-emerging infections are moving toward an era of molecular medicine to ensure that the next medical revolution would usher in a new healthcare regime for the poor people. A large number of products from biotechnology are already in the market (e.g. vaccines, diagnostics, and latest fruits of gene therapy). The richness of biological resources and biodiversity have assumed tremendous economic significance. The great diversity of plant and animal wealth as also microorganisms has a direct bearing on the very existence of humankind and the ecological security of our planet.

Prof. S. Sriramachari (formerly of the ICMR) presented an account of the *History of Medical Sciences and Medical Research in India.* He said that the history of medical sciences in our country is inextricably linked with the growth of the ICMR. Over the last nine and a half decades the ICMR has been deeply conscious of the needs of the country, and its priorities have been always in consonance with the national health policies. Initially the ICMR addressed itself to research and development programs in tropical diseases such as cholera, plague, smallpox, malaria, kala-azar, filariasis, rabies, and nutritional deficiency disorders. Later, new areas, namely Beri-beri Enquiry (at Conoor under the guidance of Sir Robert McCarrison), Quinine and Malaria Enquiry (at

Kasauli under Major Sinton), Kala-Azar Ancillary Enquiry (under Major Knowles and Dr Napier) and Research on Indigenous Drugs (under Col. R.N. Chopra, Calcutta School of Tropical Medicine) were brought under the gambit of the ICMR.

The ICMR embarked on the mission of starting a chain of laboratories which addressed to both disease-specific and discipline-specific areas. In conclusion Prof. Sriramachari emphasized that the ICMR has been a role model of how organized and systematic efforts could go in building a world-class scientific agency for the promotion and pursuit of medical sciences.

Very rightly the workshop discussed the *Philosophy of Biology*. In his presentation Prof. S. Duraiswami (formerly of the University of Delhi) addressed two cardinal issues—the philosophical foundations of biology and the contributions of advances in biology to philosophical thinking. He said that starting as 'mere' natural history—which after all is a prerequisite for later and more sophisticated inquiries—biology has blossomed into a unique branch of science. In its ontological and epistemological foundations, biology shares with physics and chemistry the same reductionist fundamentals.

Necessitated by the recognition that organisms cannot be type-cast along the lines of Plato's "eidos" and that they have a history, the concept of organicism successfully married the reductionist approach, so characteristic of biochemistry and molecular biology, to the holism. Phenomena associated with living organisms have, in consequence of their history, both a proximate and an ultimate cause.

While examining the question of purpose in life Prof. Duraiswami pointed out that purpose in the narrow, heuristic sense of function can be understood in purely mechanistic terms—be it biochemical, physiological, or behavioral properties. The very nature of science (and with it, biology) as well as the modes of inquiries associated with it is such as to preclude a meaningful discussion, in scientific terms, of the question of a 'higher purpose' in life.

Mankind is a product of long evolutionary history as the rest of the living world. The study of biology behoves mankind to live in true harmony with Nature—a lesson, alas, that we are yet to learn.

As to the contributions of biology to philosophical thinking, Prof. Duraiswami discussed the concept of emergentism, the relevance of Karl Popper's theories of demarcation and falsifiability of scientific theories, and Thomas Kuhn's notions of paradigms and paradigm shifts in the context of what he terms 'scientific revolutions'.

The concluding session witnessed a heated and lengthy debate as to what is 'Indian Science', when there was no science in ancient India, and for that matter even during a large period of medieval India. It was finally decided that to justify the title of the project under which the volume 'Life and Organicism' is contemplated, the contributors to the volume may refer, in relevant context, to such information from the ancient texts that may have a scientific bias or ethos.

Prof. Rangaswamy warmly thanked Prof. Chattopadhyaya, Prof. Subbarayappa, all the authors and discussants for their ungrudged presence, active participation, willing cooperation, patience, and enthusiasm all through the workshop. Warm appreciations were extended to Mr S. Sreekumaran and his team of administrative staff especially Mr Sehdev Ram for their untiring efforts in making the workshop an academically satisfying and enjoyable experience.

The Workshop ended with sumptuous tea.

N.S. RANGASWAMY
Seminar Director
Ashok Vihar, Delhi

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PHISPC National Seminar on Pañcāṅga, Rashtriya Sanskrit Vidya Peetha (RSVP) Tirupati, 28–30 January 2005

PHISPC National Seminar on Pañcāṅga in collaboration with the Rashtriya Sanskrit Vidya Peetha (RSVP) Tirupati, was organised from 28 to 30 January, 2005 at Tirupati in connection with the PHISPC Volume on *the Tradition of Astronomy in India*, now under preparation by Professor B.V. Subbarayappa.

The Seminar was inaugurated by Dr. V.S. Panchamukhi, the Chancellor of RSVP who in his address highlighted the importance of the mathematical aspects involved in the preparation of Pañcāṅga. Professor D. Prahlada Char, former Vice-Chancellor of RSVP, who was the Chief-Guest, stressed the need for preparing Pañcāṅga with accurate computations based on what are called *bīja saṃskāras* as well as direct observations. Professor B.V. Subbarayappa explained the genesis of the Seminar and its importance for the Volume being prepared under PHISPC. There were in all ten sessions in which 23 scholars participated.

In the first Session on 28 January, Pt. Srinivasa Adiga, author of "Udipi Sri Kṛṣṇa Pañcāṅga", explained how the practitioners of the Āryapakṣa (Āryabhaṭa School of Astronomy) use the Karaṇa text (handbook) called *Karanaprakāśa* of Brahmadeva. This Pañcāṅga specializes in the *Dṛggaṇita* system, which means the computations based on observations. He pointed out that the positions of heavenly bodies as computed by mathematical methods need to agree with the actually observed positions. This concordance is called *dṛggantaikya* or *dṛgganita sāmya*. Pt. Srinivasa Adiga explained how the *navīna-dṛggaṇita Pañcāṅga* is based on the procedures given in Venkatesha Ketakar's *Grahagaṇitam*, and emphasised that for the computations of Pañcāṅga, only *dṛgganita* system should be adopted. In support of his stand he quoted relevant passages from the *Varāhapurāṇa*.

The second speaker, Pt. Madhava Adiga, who is bringing out the Vādirāja Pañcāṅga, stressed that the importance of this Pañcāṅga lies in following the Āryapakṣa for determining the *tithis* of Daśamī, Ekādaśī and Dvādaśī and adopting the *dṛggaṇita* for the computations of the new moon day, the full moon day and the eclipses which are observable.

In the second Session chaired by Professor K.E. Muthuswamy, Professor Ramachandra Jha elaborated on the history of the Mithila Pañcāṅga. In the oldest Pañcāṅga of this genre is the year Śālivahana śaka 1844 and it is handwritten. But the present, Mithilā Pañcāṅga is based on *Makaranda paddhati* which, in fact, belongs to the Sūrya (or Saura) pakṣa.

Professor Umashankara Shukla of Sampurnananda Sanskrit University, Varanasi, explained the dimensions of the Pañcāṅga now being prepared and brought out by his Department. He described how in this Pañcāṅga the *tithis* are computed as per the traditional siddhāntic procedure while all the other components like the eclipses, the rising and setting of heavenly bodies, their conjunctions are obtained by the *navīna dṛk paddhati.* As regards the latter, Professor Shukla acknowledged that he is getting data (procedures, values of parameters etc.) from the Positional Astronomy Centre, Kolkata.

Dr. M.A. Jayashree of Mysore explained the long history of nearly a century of the popular Pañcāṅga prepared earlier by Sri Sampat Krishna Jois. In fact, the preparation of this Pañcāṅga was started with the intention of supplying one to the royal family of Mysore. Gradually it grew to cater to the needs of the general public of the then Mysore State. In course of time, Sampat Krishna Jois's Pañcāṅga started incorporating more and more details like the Gregorian dates, festivals and other details. With the consequent increase in the number of pages, and maintaining its lay out and size, this Pañcāṅga is a good example of the ability of the traditional astronomer's resilience to make it a useful guide to all sections of the Kannada speaking society.

On January 29, 2005 in the morning Session with Professor Ramachandra Pandey of the Banaras Hindu University in the Chair, the first speaker was Dr. Balakrishna Warrier from Kerala. He highlighted the different popular Pañcāṅgas published in Kerala. He pointed out that the *Ayanāṁśa* (the accumulated amount of precession of the equinox) is reckoned from 285 AD according to the Citrapakṣa based on the Calendar Reforms Committee Report. Dr. Warrier also explained how the Kollam year commences at the instant of the Nirayana Sun's entry into Siṁha (Leo) rāśi.

The second speaker, Professor N.E. Muthuswami from Thiruvananthapuram, spoke on the unification of Pañcāṅgas. He stressed the present need of preparing an accurate and unified Pañcāṅga as a ready reference handbook for the use of astrologers for astrological applications like (i) preparation and delineation of horoscopes; (ii) responding to a query; (iii) prescribing a *muhūrta*; and (iv) predicting several types of mundane events etc. He also pointed out how the present Pañcāṅgas have become corrupt, confusing and undependable due to the following reasons:

(1) adopting different *ayanāṁśas* and the failure on the part of the almanac-makers in adopting a uniform *ayanāṃśa*; (2) adoption by some Pañcāṅgas of both *sāyana* (tropical) and *nirayana* (sidereal) systems; (3) the Vākyapañcāṅgas not accepting the *ayanāṁṣa* at all; (4) giving the ending moments of *tithis, nakṣatras* etc. in *ghaṭis* and *vighaṭis* with respect to the sunrise at the place of publication of the Pañcāṅga (instead of giving the timings in hours and minutes, Indian Standard Time); and (5) starting the year with the solar Siṃha (Leo) month in Kerala while in the other parts of India the year commencing with the lunar month *Caitra.*

He also mentioned that due to the religious, sectarian and vested business interests of the Pañcāṅga-makers, it has been almost impossible to standardize the Pañcāṅgas. He maintained that the only practical and fruitful way is for the Central Government to come into the picture and to make it compulsory for all the Pañcāṅga-makers to adopt a common *ayanaṃśa.*

In this connection Professor Muthuswami suggested that a Commission be appointed with knowledgeable representatives of Pañcāṅgakartas from different states, speaking different languages. The Pañcāṅga to be published by the above Commission should be made the model for all Pañcāṅgas published in India, according to the speaker.

The third speaker in the session, Pandit Kalyana Datta Sharma spoke on the role of predicting the *grahaṇas* (eclipses) correctly and took a critical view of the present Pañcāṅgas. He explained at length the phenomena of solar and lunar eclipses and pointed that if the Pañcāṅgas predict correctly the beginning and the end of an eclipse in advance, it would earn the respect of the common people. Further, such a correct prior information enables the devout to follow their religious observances without any hindrance. He stated that for accurate prediction of eclipses, the correct true positions of the Sun, the Moon and Rāhu (the Moon's node) are necessary. If these are not correct then the prediction of eclipse timings will also be wrong.

Pt. Sharma vehemently argued that the computations should be based on the *Dṛgganita* system to ensure concordance between the observed and the calculated positions and timings. He maintained that the timings of *tithi*, *nakṣatra* etc. based only on *dṛk* (observed) computations are suitable for religious observances.

The afternoon session was chaired by Dr. Balachandra Rao. The first speaker, Dr. Sachchidananda Mishra, discussed the relevance or otherwise of the dictum, *bānavṛddhirasakṣaya* in ensuring the accuracy of fixing the *tithis.* The gist of Dr. Mishra's talk was that the traditional dictum *bāna uṛddhi-rasa kṣaya* (i.e. increase of 5 and decrease of 6) is no more acceptable since this is contradicted by modern scientific computations. He pointed out that the *Dṛk* system based on the accurate earth-centred (*bhūgarbhīya*) nirayana positions of the heavenly bodies are considered valid for the Vedic religious observances.

The second speaker was Dr. Vasudeva Sharma who spoke on Tithinirṇaya or the fixing of the *tithis* based on the *siddhāntas* and the modern *Dṛk* system.

The third speaker, Dr. Vinod Shastri, elaborated upon the *parva-saṅkrānti-nirṇaya.* The essence of Dr. Shastri's talk was that the fixing of timings of *saṅkrānti* etc. must be based on modern scientific procedures—*navīna dṛk paddhati.*

The last speaker, Professor Shivakanta Jha, spoke on *Lagnāyanam,* or fixing the ascendant for a given time at a given place. He gave the definition of *Lagna*—the point of the ecliptic at the eastern horizon—and stressed its importance. Similarly, the *aṣta-lagna* (at the western horizon), the *madhya-lagna* and the *patala lagna* were defined. The position of the Sun (on the ecliptic) at the instant of sunrise itself is to be the *lagna* at a place. The speaker emphasized the need to compute the *sūkṣma* (precise) *lagna* correctly.

On the last day of the Seminar (30 January, 2005) there were five speakers in the morning Session and two in the afternoon.

The first speaker was Professor Ramachandra Pandey from Varanasi. He spoke on *Dṛksiddha Pañcāṅga* and its usefulness. He emphasized rightly that the computations of Pañcāṅgas—the five constituents—are valid only if they are based on the accurate (and scientifically correct) true positions of the Sun and the Moon. He pointed out that only *dṛk-Pañcāṅga* is acceptable, but not others. Every day the phase of the Moon can be actually seen in the sky and hence the calculations are verifiable. Professor Pandey stated that Ganeśa Daivajña being a follower of the *dṛk-siddhānta* did the exercise of removing the errors accumulated till his time in the procedures of planetary and Pañcāṅga computations. Thereafter, at the beginning of the last century, Venkatesha Ketkar undertook the exercise of securing the *dṛk-tulya* positions of the heavenly bodies. Professor Pandey insisted that there is a need now to take up this exercise again in the interest of *Jyotiṣa śāstra.*

The second speaker in the morning Session was Dr H.M. Pandey from Vadodara who spoke on *Adhimāsanirṇaya* (or the determination of intercalary month). He pointed out the importance of Dharmaṣāstra and Jyotiṣaśāstra which mention the suitability or otherwise of religious observances in an *adhi-or adhikamāsa.*

The next talk was on the Indian Calendar system by Dr M.S. Sriram from Chennai. The speaker explained elaborately the Hindu lunar and solar calendar systems and how the two systems are linked with each other through the *adhikamāsas* and the less frequent *kṣayamāsas.* Dr Sriram listed the major Hindu festivals based on Cāndramāna system and mentioned certain festivals like Makara Saṅkrānti based on the sidereal solar calendar.

Professor S.M.R. Ansari spoke on 'A Survey of Islamic Calendars'. He explained that the Islamic calendar is lunar and is known as Hijri calendar (AH). The epoch of this calendar is the beginning of the lunar year in which Prophet Muhammad (569–632 AD) migrated from Mecca to Madina i.e., I Muharram, I A.H. corresponding to Friday, 16 July 622 AD (Julian). Since this lunar calendar was and still is without any intercalation, such a calendar could not be used for civil purpose. Therefore, a number of luni-solar calendar systems were devised in Islamic countries so that the seasonal changes could be easily accounted for, and thereby it could be used especially for revenue as well as cultural purpsoes. Professor Ansari made a brief survey of such efforts by various Caliphs and rulers of Islamic countries to reform the Hijri Calendar or to replace it by a new calendar. Through his survey Prof. Ansari led the listeners to the transmission of the calendar systems developed in Islamic countries to medieval India. These calendars were adopted by the Islamic fraternity in medieval India as is evident from the Indian Zij-literature. He enumerated about nine Islamic calendars (*Tārīkh* in Arabic and Persian) among which five are Iranian calendars. The following are epochs of some of these:

(i) Muslim (Hijri) calendar – July 16, 622 AD (Julian)
(ii) Julian calendars in Islamic countries

- (a) Coptic (Christian) with era of Diocletian – Aug. 29, 284 AD
- (b) Syro-Macedonian calendar with Alexander's era (Dhu al-Qarnain) – Jan. 1, 312 BC

(iii) Pre-Islamic (Avesta) calendar of Yazdigird III (the last king of pre-Islamic Iran) – June 16, 632 AD

(iv) The Jalāli (Malakī) calendar – March 15, 1079 AD

(v) The true solar Ilāhi calendar introduced by emperor Akbar – March 11, 1556 (Julian)

Professor Ansari enumerated four Islamic calendars described in *Zijs* compiled in medieval India by Indian astronomers. He pointed out that the first chapter in a *zij* relates to chronology.

Dr S. Balachandra Rao from Bangalore spoke on *Grahalāghavam* of Ganeśa Daivajña: (GL) its special features and efficacy of procedure. The efficacy of GL in respect of its procedures for the mean and true positions of the heavenly bodies and the eclipses was demonstrated by comparing the results with those based on modern astronomical computations.

He pointed out how the simplified procedures and validity of results of GL are indeed responsible for its overhelming popularity among the traditional (siddhāntic) Pañcāṅga-makers. The speaker mentioned that the epoch of GL is March 19, 1520 AD (Julian), Monday. Dr. Rao pointed out the following special features of GL:

(i) To avoid a large number for the *ahargaṇa* (the number of elapsed civil days since the chosen epoch) Ganeśa has adopted a cycle (*cakra*) of 4016 days, about 11 solar years. His modified *ahargaṇa* never exceeds 4016 and hence it is very handy;

(ii) For the benefit of Pañcāṅga-makers and beginners in astronomy, who may be ignorant of trigonometry, Ganeśa Daivajña has completely dispensed with the trigonometric functions, sine (jyā) and cosine (*koṭijyā*).

(iii) The dropping of trigonometric functions has not seriously affected the correctness of the results. On the contrary, it has simplified and shortened the procedures greatly. Ganeśa has adopted reasonably good and justifiable mathematical approximation for sine (*jyā*):

$$\text{Sin } \theta = \frac{4\ (180^\circ\ \theta)\ \theta}{[40{,}500 - (180^\circ - \theta)\theta]}$$

which was enunciated by Bhāskara I (early 7th Cent.).

Dr Rao demonstrated Ganeśa's procedure for the computation of solar eclipse by considering a concrete example—the solar exclipse of August 11, 1999. He showed that the timings for the said solar eclispe differed from that given in the *Indian Astronomical Ephemeris* only by about 6 to 7 minutes.

He concluded by saying that the *bīja saṃskāras* to the Siddhāntic texts can be easily and systematically worked out on the basis of the known modern formulae and values of parameters like (i) the number of civil days in a *mahāyuga*; (ii) the number of revolutions (*bhagaṇas*) of each heavenly body and its apogees (*mandocacas*); and (iii) the *paridhis* of the *manda* and the *śīghra* epicycles.

In the afternoon session of the last day of the Seminar, the first speaker was Dr. K. Ramasubramanian who spoke on "Eclipses". He recounted the various myths, surrounding the phenomenon of eclipses, current, then as now, in ancient civilizations. However, he pointed out that even before Āyabhaṭa I Indian astronomers knew the scientific causes of the eclipses. He stressed that they developed fairly sophisticated mathematical tools for the computations of the eclipses, and highlighted the mathematical procedure delineated in the Indian astronomical texts for the computation of eclipses.

Before the conclusion of the programme, the following resolutions were proposed and adopted:

(i) Steps may be taken to promote studies in Sanskrit texts on mathematical astronomy, and publish them;

(ii) Regional seminars may be organized to explore the possibilities of bringing about uniformity among various Pañcāṅgas being published in the region; and

(iii) A three-month course may be organized on mathematical aspects of Pañcāṅga for the benefit of students and others.

The National Seminar concluded with a valedictory function addressed by Professor B.V. Subbarayappa, Vice-Chancellor Professor T.S. Govindan and a vote of thanks by Dr. Radhakanta Thakur.

The National Seminar proved to be very useful not only for the participants but also for Professor Subbarayappa who is preparing the Volume: *The Tradition of Astronomy in India* under PHISPC, since the seminar discussed several issues of astronomical importance and their tradition.

S. BALACHANDRA RAO
*A participant**
Indian Institute of Science,
Bangalore

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* This report has been prepared on behalf of Prof. B.V. Subbarayappa.

Sandhān, Vol. V, No. 1, January–June 2005

Seminar on History of Agriculture in India, India International Centre, New Delhi, 21–23 February 2005

A Seminar on History of Agriculture in India with focus on medieval and modern periods up to the present was held from 21st to 23rd February 2005 under the auspices of the Project of History of Indian Science, Philosophy and Culture at India International Centre, New Delhi by Professor V.C. Srivastava, Editorial Fellow of Volume V – History of Agriculture in India. The Seminar was meant for all the contributors to Volume V, Part II.

The Inaugural session was held on 21 February 2005 (forenoon). Professor V.C. Srivastava—the Director of the Seminar welcomed the participating scholars. He introduced the theme of the Volume and purpose of the seminar. Interaction among scholars and comments on different papers, he believed, will go a long way in enriching the volume. It was followed by self-introduction of participants. Professor Harbans Mukhia (J.N.U.) presided over the session and addressed the gathering on historical explanation from Herodotus to post-modernism, European perspective of Agricultural Technology and the issue of its non-occurrence in India, and various answers to this phenomenon. He asserted that Medieval India did not lack in Agricultural Technology. The address of the Chief Guest Padam Vibhushan, Professor Irfan Habib (A.M.U.) (who could not attend the Seminar due to his illness), was read by Professor V.C. Srivastava. The address was on *Medieval Agricultural Technology* including preparation of the soil, sowing practices, tools, irrigation, croprotation, agricultural processes. The vote of thanks was proposed by Prof. V.C. Srivastava to all the scholars.

The second session was held after lunch break from 2.00 p.m. to 5.30 p.m. with Professor M.S. Jain (Rajasthan University, Jaipur) in the Chair. Professor Harbans Mukhia (J.N.U.) presented his paper on *Agricultural Technology in Medieval North India.* Two other papers—*Agriculture in Medieval Kashmir* of Professor A.Q. Rafiqui (Kashmir University, Srinagar) and paper entitled *Temple Land Grants in Medieval Deccan of* Professor Rekha Pande (University of Hyderabad) were presented by the editor. Professor S.L. Choudhary (Udaipur) presented *A Review of Contributions of Asian-Agri History Foundation,* Secunderabad.

The third session was held on 22 February 2005 from 10.00 to 11.30 a.m. with Professor S.Z.H. Jafri (Delhi University) in the Chair. The following papers were presented:

1. Dr. Satyendra Nath (University of Allahabad) on *Agriculture Produce and Agrarian Administration in Medieval Period.*
2. Professor A.R. Kulkarni (Pune University, Pune) on *Agriculture in Medieval Maharasthra.*
3. Professor V.S. Bhatnagar (Rajasthan University, Jaipur) on *State of Agriculture and Related Aspects in Medieval Rajasthan (1200–1800 AD).*
4. Professor S.L. Choudhary (Rajasthan University, Jaipur) on *Plant Protection in Medieval and Modern Indian Agriculture.*

The fourth session was held on 22 February 2005 at 11.30 a.m. to 1.30 p.m. with Professor Sukhwant Singh (Guru Nanak Dev University Amritsar) in the Chair, and the following papers were presented.

1. Dr. Dhriti Solanki (Udaipur) on *Role of Women in Agriculture in Medieval and Modern India.*
2. Professor Om Prasad Srivastava (University of Allahabad) on *Effect of Agriculture on Environment in Modern India.*
3. Professor T.R. Sharma* (Hyderabad) on *Agrarian System in the Deccan and the South (AD 1600–1800).*

The fifth session was held on 22 February 2005 from 2.00 p.m. to 5.30 p.m. with Professor Om Prasad Srivastava in the Chair. The following papers were read:

1. Professor S.Z.H. Jafri (Delhi University) with Dr. Nalini Singh and Dr. Jaya Kakkar (Delhi University) on *Interrelationship of Agriculture, Forestry and Ecology in the Mughal province of Oudh and Allahabad.*
2. Professor Rasesh Jamindar* (Gujarat Vidyapeeth, Ahmedabad) on *Agricultural Technique in Gujarat (From 1700 to 1947 AD).*
3. Professor Manorama Sharma (H.P. University, Shimla) on *Agriculture in Folklore and Music of Himachal Pradesh.*

The sixth session was held on 23 February 2005 from 10.00 a.m. to 11.30 a.m. with Professor A. Vasantha (J.N.U.) in the Chair. The following papers were presented:

1. Dr. Madhumita Srivastava (Srinagar) on *Is India's Agrarian Structure Conducive to Sustainable Development?*
2. Professor V, Kurien* (Anand, Gujarat) on *History of Dairy Cooperatives in India.*
3. Professor Y.L. Nene* (Secundarabad)
    1. *Agriculture through the Ages until 1947.*
    2. *Ancient Classics on Indian Agriculture.*
    3. *Mango through Millennia.*
    4. *Rice Research in South Asia through Ages.*
4. Mr. G.C. Srivastava (Noida) *Indian Peasants As Reflected in the Stories and Novels of Munshi Prechand.*

The Seventh session was held on 23rd February 2005 from 11.30 a.m. to 1.30 p.m. with Professor N. Benjamin in the Chair. The following papers were presented:

1. Professor M.S. Jain (Rajasthan University, Jaipur) on *History of Agriculture in Rajasthan—Structural Transformation 1750–1947.*

2. Prof. R.K. Pandey (Banaras Hindu University) on *Dairy Products Modern Technique and Development.*
3. Professor Rasesh Jamindar* (Gujarat Vidyapeeth, Ahmedabad) on *Resolution on Perspective Problems of Farmers in Gujarat: A Case Study of Petlad Taulka Prajamandal, Paris had (1938).*
4. Professor V.K. Anand* (I.I.A.S. Shimla) on *Economic History of Agriculture in Modern India, and the Plight of the Poor.*
5. Mr. G.C. Srivastava I.A.A.S., (Noida) on *Contribution of ICAR to Development of Indian Agriculture.*

The eighth session was held on 23 February 2005 from 2.00 p.m. to 4.00 p.m. with Mr. G.C. Srivastava I.A.A.S., in the Chair. The following papers were presented

1. Professor Sukhwant Singh (Guru Nanak Dev University, Amritsar) on *History of Agriculture in 19th and 20th Century Punjab.*
2. Professor A. Vasantha (J.N.U.) on *Evolution of Agricultural Developments in Nineteenth Century India.*
3. Professor N. Benjamin (Pune University, Pune) on *Agriculture History of Rajasthan (1947–2000).*
4. Professor V.K. Sharma (Shimla) on *Apples in Himachal Pradesh: Introduction and Culture.*
5. Professor Sushil Srivastava (University of Allahabad) on *British Government, Congress and the Peasants.*
6. Professor V.C. Srivastava (Allahabad) on *Contribution of Swaminathan Foundation, Chennai to the Development of Agriculture in Modern India.*

The seminar was a great success as it had good interaction among scholars and comments by scholars clarified many points. Many other papers were also presented by the editor in absentia.

The last session was Valedictory session on 23rd February 2005 from 4.00 p.m. to 6.00 p.m. Professor V.C. Srivastava welcomed the Chief Guest, Chairman of the Project Professor D.P. Chattopadhyaya. Professor V.C. Srivastava presented a summary of the Seminar. Professor D.P. Chattopadhyaya gave the Valedictory Address and inspired contributors to make the Volume a meaningful and standard monograph on the theme. He welcomed the suggestions and gave valuable advices. Professor V.C. Srivastava—Director of the Seminar gave a hearty Vote of thanks to Professor D.P. Chattopadhyaya and assured him that the Volume will be completed in a few months and it will come up to the expectation of the Chairman of the Project—Professor D.P. Chattopadhyaya and the academic community.

He also proposed a Vote of thanks to all the participants for their valuable presence and contributions and Project Coordinator —Professor Bhuvan Chandel—and her staff for excellent management of the Seminar.

V.C. Srivastava
Editorial Fellow
Volume V History of Agriculture in India
Allahabad

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* In absentia by the editor.

Sandhān, Vol. V, No. 1, January–June 2005

National Seminar on "Indigenous Tribal Religions of the North-East", Imphal, 21–23 March 2005

The Inaugural Session, held on 21 March 2005, was graced by Professor D.P. Chattopadhyaya, Project Director and Chairman of CSC, Professor Kireet Joshi, Chairman, ICPR, and Dr. T.S. Gangte, Retired Education Director, Govt. of Manipur, as the Chief Guest, the Guest of Honour, and the President, respectively.

The following research papers were presented and discussed in the three-day seminar:

1.	Defining the Indigenous Tribal Religion	–	Professor Gangmumei Kamei Retired Professor of History, M.U.
2.	Indigenous Tribal Religions of the North-East (of India)	–	Dr. Namaram Sukumar Singh Retired Director of Health Services, Govt. of Manipur
3.	Traditional Religion and Religious Beliefs of the Rabhas	–	Dr. Upen Rabha Hakacham Reader, Department of Assamese Gauhati University
4.	Indawi, Primeval Religion of Thadou Kukis	–	Dr. T.S. Gangte Retired Director of Education Govt. of Manipur
5.	Supernatural Beliefs and Practices among Thadous	–	Dr. T.S. Gangte
6.	The Concept of God in Thadou Kuki Religion	–	Dr. Jamkhothang Haokip Lecturer, Theological College Churachandput

7. Thadou Traditional Religions – Ms. Ngahpi Lhouvum
Research Scholar in Philosophy
Manipur University

8. Traditional Religion of the Paite (Tedim Chin) and Nativistic Movement – Dr. H. Kamkhenthang
Additional Director of Tribal Welfare
Govt. of Manipur

9. A Descriptive Account of Hmar Religion – Dr. Vanlalnghak
Reader in Philosophy
North-Eastern Hill University, Shillong

10. The Traditional Religious Beliefs of the Chirus of Manipur – Mr. Namkholien Chiru
Lecturer in Philosophy
Imphal College, Imphal

11. The Indigenous Rites and Rituals of Chiru Tribe of Manipur – Ms. N. Premi Devi
Research Scholar in Philosophy
Manipur University

12. Religion of the Zou – Dr. M.C. Arun
Assistant Professor in Anthropology
Manipur University

13. Mode of Worship of Tingkao Ragwang, The Creator and Almighty God – Mr. Lanbilung Gonmei
Lecturer in History
Imphal College, Imphal

14. Traditional Religion of the Meiteis – Prof. C. Ibotombi Singh
Ex. Principal, D.M. College, Imphal

15. Religious Beliefs and Practices of the Andros of Manipur – Dr. N. Basanta
Senior Lecturer in History
Thambal Marik College, Manipur

Brief observations on the proceedings of the Seminar:

In his paper, Professor G. Kamei discussed the conceptual issue of defining "indigenous tribal religion". He objected to the use of the term "animism" in characterising the religious beliefs of the indigenous tribes of India's north-eastern region as it was done by the British officials and ethnographers, such as, P.T.R. Gurdon, T.C. Hodson, J.H. Hutton, J.P. Mills, John Shakespeare, William Shaw, etc. Kamei maintains that the description of the tribal religions as animistic arises out of the prejudice on the part of the Britishers against the tribals whom they considered as savages, and that the characterization of tribal religions as animism has generated a lot of misgivings about the indigenous tribal religions, which, according to Kamei may on no account be termed as animistic. He has strong reservations about the term "animism" which was popularized by the British anthropologist E.B. Tylor, for whom *animism* (in the sense of *spiritism*) is the most rudimentary form of religion. Kamei maintains that the more appropriate terms for characterizing indigenous tribal religions are—"primal religion" (following Harod Turner), and "primordial religion" (as used by German scholar, Ivan Lissner).

While agreeing with Professor Kamei's objection to the improper characterization of tribal religions as animism, we cannot be oblivious of the intimate interplay of nature, man and spirit in the life (or shall we say the "life-world") of the tribal people of India's North-East, most of whom live in intimate association with nature. These are the people whose ancestors, several decades ago, were nurtured in the cradles of nature—in the hills and dales deep inside the unending mountain ranges and forests. Hence, a study of the belief systems of these people may be undertaken from the standpoint of the matrix of "man-nature-spirit". The eminent social anthropologist L.P. Vidyarthi's spectacular findings from the study of the socio-cultural life of the Maler tribes of Madhya Pradesh has thrown great light on the belief systems of the tribals. We find many instances of man-nature-spirit interaction in the course of the study of the belief systems of the tribal societies of North-Eastern India too. Max Muller's two volume lectures on religion delivered in London in the 1890's refer to the interaction of man-nature-soul in the development of tribal religion, which, according to him, forms the early stage of the religious development in the history of mankind prior to the higher development of religion. Max Muller recognised three stages in the development of religions, viz., (a) tribal religion, (b) national religion, and (c) world religion.

Dr. Sukumar Singh's paper "Religion of the Naga Tribes of Manipur" is based on his own experiences in the 1950's and 1960's as medical officer of the Government of Manipur in the interior hill areas inhabited by such Naga tribes of Manipur as, Tangkhuls, Marams, Mao, Kabuis, Marings, etc. He has given interesting accounts of the religious rites and rituals associated with the rites and rituals of these tribes in the comparative light. He has referred to the worship of various deities (benevolent as well as malevolent), religious rites, sacrifices, taboos, rites of passage and the role of the village headman/priest in the performance of religious rites.

Dr. Upen Rabha, in his paper "Traditional Religion and Religious Beliefs of the Rabhas", describes the religious beliefs and ritualistic practices of the traditional religion of the Rabhas, who settle mostly in the interior areas of Assam adjoining the vast forests and foothills. The Rabhas are peace-loving people who live in amity and harmony with the Hindu Assamese people, and their contributions to Assamese culture and literature are remarkable. Majority of the Rabhas have professed the Hindu religious beliefs and practices although some sub-groups among them are still preserving their traditional religious practices. The Hindu Rabhas are the worshippers of Siva and Sakti. Hinduism professed by the Rabhas was recognized as "Rabha Jatiya Hindu Dharma" for the first time in 1893.

The worship of Siva and Sakti under various names and forms was prevalent among the majority Hindus and the tribals since time immemorial in many parts of India's North-Eastern Region. The worship of supreme deities under various names, the descriptions of whose prowess in the legends and traditions of various tribes match with that of Lord Siva, is very popular. For instance, *Bāthou*, the Supreme God of Bodos, is considered as Lord Siva. Similarly, *Nongpok Ningthou* and *Pānthoibi*, the Supreme God and Goddess of Meitei Manipuris, are the counterparts of Siva and Parvati. The Meiteis have a legend of the circumambulance of the world by the two mighty sons of the Supreme God, Guru Sidaba, as recorded in *Sanāmahi Nongkhong Koiba*, an old manuscript. It was surprising to learn about it for the first time, because this legend is found to be the exact parallel to the legend of *Siva Purāna*, i.e. the legend of Kartikeya and Ganesha. Furthermore, in the incantations in honour of the deities in the traditional Meitei religion, we find many similarities with the incantations in the Tantric Hindu texts. The Meitei *mantras* ("Laiwa" in Meitei language) and *jantras* (*yantras*) have many similarities with those of the Tantras. The Tai Ahom kings of Assam also, who ruled for five hundred years from Sivasagar in Upper Assam as the citadel of power, were great patrons of the worship of Siva.

In the case of the religious beliefs of some of the tribes, the concept of God is not well-defined. But in majority of the cases, the concept of God as the creator of nature and man is distinctly pronounced. God as the creator is regarded as the benevolent God in most of the tribal religions. The tribals believe that progress and prosperity in the life of the individual and the family, as well as success of the tribe in hunting expeditions and wars are due to the benevolent gifts of such a God. God, the creator is known by various names among the tribes—*Tingkāo Rāgwāng* by the Zeliangrong Nagas, *Chung Pāthien* by the Kukis, *Siāmtu Pāthian* by the Mizos, *Orāmei* by the Mao Nagas, so on and so forth. It is, however, difficult to know about the concept of a personal God in the indigenous tribal religions.

The tribal people believe in a number of spirits, most of whom cause harm to human beings often by bringing about pestilence, disease and death. They take the help of the witch doctors and village priests in performing appeasement rites and animal sacrifices for which they used to spend a lot. They believe in many evil spirits which haunt at different places, such as, the rivulets, springs, big trees, caves, etc. Some of the tribes believe that there is constant war between the benevolent gods and the evil spirits. Some of the Naga tribes believe in the sky (the heaven) as Father God and the earth as Mother God. The Mao Nagas believe that the sky is the male principle and the earth the female principle, and that an earthquake is their conjugal embrace, whence all fertility, all growth on the earth, have their origin. The belief in the sky God and the Goddess earth appears to be the universal belief in many a civilizations—in the Vedic culture, in the ancient Egypt, in China, in the Scandinavian pantheon, etc. Many fertility cults, rites, rituals and festivals are observed in honour of the Sky God and Goddess Earth. Among the tribals of the North-East such rituals and festivities are connected with the agricultural activities, such as, sowing of seed and harvesting crops, tribal life in the past being centred around agriculture. Some of the major tribes observe harvesting festivals on a grand scale. Mention may be made of the *Wangla* festival of the Garos of Meghalaya, *Kut* festival of the tribes of Kuki-Chin family, *Gan Ngai* of the Zeliangrong Nagas, to name a few.

Some such tribes of Arunachal Pradesh as, Adis, Akas, Apatanis, Bangnis, Nishis, Mishmis, Mijis, Thongsas, etc., worship Sun and Moon God namely, Donyi-Polo and Abo-Tani, the original ancestors for most of these tribes. They consider Donyi-Polo as the mother and Abo-Tani as the father God. The concept of father and mother God is also found among the Khasi people of Meghalaya. According to them, *U Blei Nongthaw*, who is a masculine God is considered as the Creator, and *Ka Blei Nonasynshar Nonghukam*, who is a Goddess is considered as the Ruler. The traditional Khasi society is matrilineal (matrimonial, according to some). Ancestor worship underlies the indigenous Khasi religious belief and practices.

Ancestor worship is prevalent among many other tribal societies of the North-East also. It is there among the Ahom Tais of Assam who worship their ancestors in the religious festival called *Medam-me-phil.* The traditional Meiteis of Manipur also worship ancestors and perform exclusive rituals in honour of their ancestors. The great ancestors of some of the Meitei clans have even been deified and community worships are offered to them in the form of *Lāi Harāoba* festival (festival of appeasing God and Goddess), which is observed every year during April–May month. The Meiteis worship *Umang Lāi* (Gods and Goddesses) by constructing temples in some secluded forested areas on the outskirt of the village, where annual Lāi Harāoba festival is observed in honour of the deities. Some of these *Umang Lāis* are very similar to the Burmese *Nats,* spirits who have their abode reserved by the people in some forested areas on the outskirt of the village. (Muang Htin Aung, a Burmese scholar, who happened to be a former Ambassador of Burma to India, has written extensively about the *Nats*).

Lāi Harāoba of the Meiteis is an elaborate community worship of the deities lasting between a fortnight to a month, wherein the people pray to god and goddess to be blessed with health, fertility, well-being and economic prosperity of the society and the state. The level of religious consciousness is very high since it involves deep philosophical insight into the creation of the world by the Almighty God, *Atiyā Guru Sidaba.* It involves an intricate cosmology and the rituals depict in theatrical manner the entire spectrum of creation and the human life cycle through songs and dances and the intermittent narrations by the priests and priestesses (*Amāibas* and *Amāibis*). Although *Lāi Harāoba* is the indigenous religious practice of the Meiteis of Manipur, a close look into the rites and rituals and the study of the significance of the details of the ceremonial practices reveal elements from the cult of Siva and Shakti, and Shamanism with affinity to the traditional Tibetan Bon religion. Many rites and rituals practised by Tibetans are (from my study of the works of scholars like Austine Wendel and Nakamura) very much similar to those of *Lāi Harāoba.* In view of the height of spiritual consciousness evinced by the religious system of the Lai Haraoba, I consider that this religion has risen above the stage of tribal religion, and that this religion may be treated as a form of "national religion" (if I adopt this term in the sense in which Max Muller employed it in his *Lectures on Religion*). The invocations of the *penā* singers and the Amaibas and Amaibis may in many respects be compared to the ancient Hindu and the Buddhist invocations. The trance-like state of the *Amāibis,* who are the *media* of the deities, is a state of Yogic realization, wherein the practitioner's attainment of Yogic consciousness of a high order enables him or her to visualize the shape of things and events at all times—past, present and future.

Although the indigenous tribal religions of the North-East are as diverse as the cultural diversity of the nearly one hundred tribes, there are many common elements in their religious beliefs and practices. Firstly, these tribes live in the cradle of nature in the isolated hills and forests, and as such the impact of nature in their day-to-day life and life cycle is very much evident. They have to take nature's shelter and live in harmony with nature. In some places the tribal community reserve forest sanctuary for the village deity. Besides, they are afraid of the fury of nature, and they have to ward themselves off from the detrimental forces of nature. Hence, they pray to nature through various spirits in whom they believe. Secondly, under the adverse conditions of life amidst the forces of nature and the hostile environment in which each tribal group vies with one another for natural pastures (for territorial jurisdiction), the individual has to survive under the shadow of the community or the society. Hence, in the tribal life, the individual member has to work in the interest of the community. The communal bond is compelled to be firm due to the compulsions of their living conditions. This is why religious practices in the traditional tribal societies happened to be the affairs of the community as a whole. Even in the case of ritualistic practices in the event of disease or death, the community had to be feasted upon. Especially when someone becomes economically prosperous, he has to perform the feast of merit, wherein the village had to be fed for more than one or two occasions. In such ritualistic feasts, the village priests play a vital role since they are adept in the lore of sorcery for the appeasement (or containment) of the spirits. Thirdly, the religious practices are mostly related with the agricultural practices and the rearing of livestock. This is the reason why tribal festivals are basically agricultural and fertility related festivals.

Fourthly, most of the tribes believe in the spirit of the dead. Some even believe in life after death. The concept of heaven and hell also is there, although not well-defined. They believe that good people will go to heaven where they will live happily, whereas bad people will go beneath the earth where they will live in perpetual misery. The traditional tribal people follow moral codes of their community to the core. The concept of morality for the tribals is not abstract. Morality consists in obedience to the dictates of the society.

Fifthly, ancestor worship, or the worship by way of offering food, clothing, etc., to the spirits of the deceased ancestors, is common among the tribals. The death rites or the rites of passage are in many cases elaborate. The tribals consider it their duty to show respect to the spirit of their deceased near and dear ones. They invariably show deep respect to their forefathers.

Sixthly, some of the tribes worship the sun and the moon. Many of them pray to the rain god and mother earth for good production of agricultural crops.

Seventhly, snakes are among the most dreaded living beings, especially in the forest environment. Some of the tribes believe in the snake cult, and offerings, especially sacrifices are made before some species of snakes whom they worship within the precincts of their homestead land.

Eighthly, the tribals in the past believed in fetishes, totems and taboos (*genna*). They believed in the omens of dreams.

There are many other elements which are peculiar to some tribal religious beliefs and practices.

Tribal religion is a vast subject which has not yet been properly explored. It is an important field of research which is worth pursuing for the proper understanding of the culture of North-East India.

S. SHYAMKISHORE SINGH
Director
National Seminar on
Indigenous Tribal Religions of the North-East
Manipur University, Imphal

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Seminar on "Role of Christianity in the Development of North-East India", Brahmaputra Hotel, Guwahati, Assam, 5–7 April 2005

Project of History of Indian Science, Philosophy and Culture, New Delhi organised a National Seminar on *"Role of Christianity in the Development of North-East India"* from 5 to 7 April 2005 at Brahmaputra Hotel, Guwahati, Assam. The Seminar was attended by forty scholars representing various Christian Churches, scholars from universities, journalists and representatives of non-Governmental organizations. The Inaugural Function of the Seminar began with observance of two-minute silence in respect and reverence to Pope John Paul II, leader of one of the major Christian denominations, who had passed away on the eve of the Seminar.

The Director of the Seminar explained the objectives of the three-days meet highlighting the fact that Christianity and Christian Churches seem to influence practically all aspects of human culture in the North-East India. He also highlighted the fact that on the one hand Churches play a significant role in the conduct of peaceful democratic elections, on the other hand Churches seem to have no influence in decreasing the high degree of violence and insurgency experienced in the region. With a very high degree of literacy, and more particularly female literacy, North-East region represents a unique opportunity for scholars to study every aspect of socio-cultural and economic development. One of the areas of interest for the scholars would be to understand why a region that has seen high incidence of 'political violence' is relatively free of 'personal' violence particularly against women and children. Understanding Christianity, the dominant religion of the region, and its role in the development will enhance our own understanding of the complex culture of North-East, concluded the Director of the Seminar.

Professor D.P. Chattopadhyaya in his inaugural remarks dwelt at length on the significance of religion in determining the life of people. Emphasizing both the 'global' and the 'local' aspect of religion, he provided the participants a *gestalt* view of how 'locality' has a significant role to play in determining the faith and practice of various religions. Professor Chattopadhyaya exposed significant layers of various religious and belief systems of West Asia, Europe and South Asia (particularly India) and their resultant influence in the 'making' of its people. Recalling history, Professor Chattopadhyaya reminded the audience how U.S. President Truman, instead of sending economists and technocrats, sent anthropologist Ruth Benedict to Japan (soon after the Hiroshima and Nagasaki atomic devastations) in order to understand the psyche of Japanese people. Professor Chattopadhyaya cautioned scholars against labeling people as 'primitive', 'irrational' 'pagan' etc. and appealed for an understanding of faith based on both 'revelation' and 'intuition'.

Rt. Rev. Dr. Dominic Jala, Archbishop of Shillong, delivered the keynote address highlighting the following five Christian parameters for development: (i) social justice, (ii) dignity of human nature, (iii) sanctity of human life, (iv) right of every person to that level of freedom to ensure accessibility to development and (v) peace and solidarity. Reflecting on the need of cultural liberty, Dr. Jala argued that cultural differences do not necessarily lead to social, economic and political conflicts. Inherent cultural rights of different ethnic groups should not supersede political and economic ones. Quoting Desmond Tutu, he said, instead we are called to "delight in our differences". Again, he opined that ethnic and socio-religious differences, far from being threats to developments, are an inescapable feature of the landscape of the politics of this new millennium.

Dr. Jala also anaysed the UNDP report and the five myths that have been debunked. He also showed how theories of "clash of civilizations" are based on exaggerations of differences between cultural groups and attempts to ignore the similarities between them. "Culture" is not fixed and unchanging so that the world cannot be divided into "civilizations" and "cultures". He concluded by saying that cultural liberty should be at the center of human development—purely social, political and economic action does not always guarantee cultural liberty.

Professor Shyamkishore Singh in his concluding remarks of the inaugural session pleaded for a comprehensive study of North-East India in an effort to identify the Christian contribution to its development. Highlighting the tremendous expansion of educational institutions and development of both English and regional languages, Professor Shyamkishore Singh attributed the same to various activities of Christian Churches. Religion does play a very important role in unification and development of communities, but care should be taken to preserve and strengthen the positive elements of traditional cultures lest we lose our identity.

Rev. Dr. Maliekal George in his paper entitled "*The Contribution of Christianity towards the National Integration of Northeast India*" focused on contribution of Catholic Church towards development of North-East India. The focus of his paper was to highlight the delicate balancing process that Catholic Church has been doing to foster and enhance the tribal identity on the one hand and to promote global brotherhood on the other.

Professor O.L. Snaitang in his paper on "*Christianity and the Development of North-East*" provided an historical overview of the entire North-East and highlighted the contribution of Christian Churches (all denominations) towards the change and progress of tribes and peoples of North-East India. One of the significant aspects of Professor Snaitang paper is a detailed study of the role of Christian Churches in the conflict resolution and peace in an insurgency ridden region.

Rev. Dr. Dominic Jala chaired the session.

Professor Sudhir Jacob George in his presentation on "*Impact of Christianity in Nagaland*" after analyzing the present alienation of the large number of people of various tribes of North-East India, pleaded for a proper understanding of tribal cultures by various constituents of the State. He also raised serious questions regarding the role of Churches in terms of defence of minorities.

Rev. Dr. Sebastian Karotemprel in his paper entitled *"The Role of Christianity in the Promotion of Culture and Development"* discussed the role of Christianity, and particularly, Catholic Churches, in preservation and promotion of indigenous cultures. He also responded to the ill-founded criticisms against the Churches that tribal cultures are becoming extinct due to the influences of Western orientations of the Churches. Dr. Karotemprel explained with examples how the Churches in India and particularly in North-East have deep cultural roots in tradition.

Professor Shyamkishore Singh chaired the session.

Mr. S.K. Austin John in his presentation entitled "*Role of the Anglican Church in the Development of North-East India*" documented in details the activities of Church of North India with reference to Diocese of North East India. Rev. Dr. Walter Fernandes in his paper entitled "*Christianity and the Development of North-East India*" provided the seminar with a theoretical framework to understand what constitutes development in the North East India and the role played by the missionaries. He concluded his analysis by pointing out that missionaries were rarely aware of the social processes they unleashed because of their evangelical mission.

Professor O.L. Snaitang chaired the session.

Professor Lianzella in his paper on *"Christianity and its Contributions to the Mizo Society*" gave a historical exposition of changes that Christianity due to its belief systems and social activities brought about in the Mizo society. Professor Lianzella detailed Christian influences in social, religious, political life of Mizo society and how status of women has changed due to education and overall transformation in society.

Rev. Dr. R.G.M. Sohkia in his paper on "*Christian Response to Tribal Creation, Myths and Legends*" studied various tribal myths and compared them to Biblical stories. Dr. Sohkia took up for detailed analyses the following myths: the Sohpetbneng myth, the Diengiei Peak myth and Ka Krem Lamet Latang myth.

Rev. R.P. Lyngdoh chaired the session.

Dr. Bhagat Oinam and Ms. Lianboi Vaiphei in a joint presentation on *"Christianity and Identity Formation in the Hills of Manipur"* critically discussed the role of Christianity in formation of tribal identity among the Manipuris. The presenters pointed out that the idea of emancipation of tribals brought about by education is from Christian or Church point of view and not necessarily from the point of view of the tribals.

Mr. Raymond Kharmujai in his paper on *"Role of Education in the Development among the Khasi and Jaintia People of Meghalaya"* documented the beginnings of education led by Welsh Methodist Calvinistic Missionaries. Mr. Kharmujai pointed out the fact that the spread of education has led to outward movement of Khasi and Jaintia youth out of tribal areas. What is needed today, Mr. Kharmujai pointed out, is the spread of specialized education which is not taken up by the Christian Churches.

Professor Manorama Sharma chaired the session.

Professor Manorama Sharma in her critical presentation *on "Christianity and Development: The case of North East India"* highlighted the need of critical appraisal of role of Christianity in the development of North-East.

Rev. W.C. Khongwir in his presentation entitled *"Presbyterian Church of India and the Development of North East"* documented various activities undertaken by the Presbyterian Churches in order to bring about a personal, social and religious transformation of various tribal people in the North-East region of India.

Professor Sudhir Jacob George chaired the session.

Dr. T.S. Gangte in his paper on *"Christianity in the Development of Modern Education in Manipur"* after analyzing the changes in educational systems in Manipur concluded that Christianity played a vital role in changing the life-style of the society and has brought about miraculous change in Manipur.

Rev. Dr. Pakhuangte in his oral presentation on *"Evangelical Free Church of India and Development of North East"* described how the primitive societies that were characterized by head-hunting and brutal violence have been transformed by the principles of mutual respect and tolerance by Christianity. This is particularly so in Naga communities where Evangelical Free Church of India has established its missions, he claimed.

Rev. P. Longchar, in his oral presentation on *"Role of NBCC in the Development among Naga People of Nagaland"* after describing the various social and educational activities of the NBCC, discussed the role of NBCC in bringing about peace in insurgency affected Nagaland.

Rev. Dr. Maliekal George chaired the session.

Ms. Priyadarshini M. Gangte in her paper entitled *"Impact of Christianity on some Societal Institutions relating to Women among Mizos"* discussed how various social institutions have undergone change due to impact of Christianity among the Mizos.

Rev. M.M. Rimzu in his paper on *"Seventh Day Adventist and Development of North East"*, documented and analysed activities of Seventh-Day Adventists, the second largest Christian denomination in the world, in the development of North-East. Dr. Presanjit Biswas in his paper on *"The Cultural Face of Christianity: Identity and Self-Description among Tribes of North East India"* analysed the polyethnic and polycultural milieu of North-East India with reference to 'the other' in relation to mainstream India.

Rev. Dr. Walter Fernandes chaired the Session.

V.S. Varughese in his presentation on "*Contribution of Christian Church in field of Education and Literature*" provided a detailed study of various educational activities of Christian Churches in bringing about radical change in the way they perceived the world. Rev. P.C. Muanthanga in his oral presentation on *"Role of the Baptist Church of Mizoram in Development of Northeast India"* analysed the idea of 'development' in the sense of societal transformation and how Christianity has changed the society from 'decadence of animism and head-hunters' to self-respecting and spiritually transformed communities. Rev. Dr. Lalramliana Pachuau in his paper on *"Role* *of the Church in the Development of Mizoram"* highlighted the fact that inspite of spiritual transformation of the society and development of Mizo society through education, health, etc. the community faces hardships in terms of materialist values that are gaining ground.

Ms. Patricia Mukhim chaired the session.

Dr. Rajesh Deb in his presentation on "*Politics of the Script: Colonial, Christian Interface*" critically reviewed the role of script and the growth of self-identities of the people of North-East India. Dr. A. Bimol Akoijam in his presentation entitled *"Beyond Ordained Identity: A Reflection on Christianity and Identity Politics in the North-East India"* reflected on North-East India and the role of Christianity in two phases: pre-colonial and post-colonial. He pointed out that Christianity is not the only enterprise that transformed people. Ms. Patricia Mukhim in her presentation on "*Christianity and its Influence on Tribal World-View*" critically evaluated the role of Churches in bringing about cohesiveness and solidarity among the people of North-East, and particularly among the tribals. She reflected on the environmental degradation taking place and pleaded for a more decisive action by the Churches to avoid the disaster.

Professor Bhuvan Chandel chaired the session. There was no separate Valedictory function. Professor Bhuvan Chandel in her concluding remarks urged the participants to critically reflect on the various aspects of development of North-East with a view to identify the positive elements of the developmental processes. Development, she opined, constitutes not mere poverty eradication, but total development of individuals and societies. Referring to United Nations Millennium Declaration, she said, the extent to which we foster the basic values of freedom, equality, solidarity, tolerance and respect for nature would determine whether there is development in our society or not. Although Christianity did foster these values in the North-East India, we would have to also analyse why there is so much strife and discontent among the communities.

A.V. Afonso
Fellow,
Indian Institute of Advanced Study, Shimla

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National Seminar on Varieties of Yogic Experience, Sri Aurobindo Institute of Culture, Shillong, 28–30 April 2005

The venue of the National Seminar on *Varieties of Yogic Experience*, sponsored by ICPR and supported by PHISPC was the premises of the Sri Aurobindo Institute of Culture (SAIC) at Shillong, Meghalaya, its setting marked by charming hillocks and lush green trees. The event was spread over three days, beginning in the morning of the 28th of April and concluding late in the evening on the 30th of April 2005.

The inaugural-cum-first session was presided over by Prof. B.B. Dutta. In his inaugural address, Prof. D.P. Chattopadhyaya spoke on *Yoga: the Highest Form of Epistemology*. The presentation invoked the right spirit in which the world of Yoga was to be perceived. Thereafter, while Manoj Das introduced the specific theme of the Seminar through his paper entitled *My Explorations of Yogic Experiences*, Prof. Kireet Joshi dealt with the subject proper, the *Varieties of Yogic Experience*, highlighting the factors that make the range of Yoga so very complex, yet so very important in the context of human quest through the ages and the ultimate purpose of life. The session ended with a vote of thanks by Prof. Debjani Roy.

Prof. Chattopadhyaya's and Prof. Joshi's presentations were a refreshing and inspiring beginning of the event and the papers read in the subsequent sessions by scholars—some of whom were acknowledged authorities on the subjects they dealt with—merit deep appreciation. An aspect of the seminar that deserves special mention was the stimulating interludes of questions and answers as well as discussions that followed each presentation. The scholars were receptive enough to accept the suggestions and observations made by the fraternity of participants and promised to revise their papers accordingly.

The different sessions were presided over by Prof. D.P. Chattopadhyaya, Prof. Kireet Joshi, Prof. S.P. Singh, Prof. Karunesh Shukla and Prof. Manoj Das. The participants and their topics were: Prof. Shyam Kishore Singh (*Vaishnavite Experiences of Shankar Dev*); Shri A.K. Sen Gupta (*Legend of Siddhashrama or Shangri-La*); Prof. Krishna Roy (*Mystic Experiences of Rabindranath Tagore*); Prof. Bharati Jhaveri (*Vaishnavite Experiences: Narsi Mehta*); Prof. Sirajul Islam (*Spiritual Experience in Sufism*); Prof. Karunesh Shukla (*Yogic Experience in Buddhism*); Prof. Mukul Raj Mehta (*Yogic Experience in Jainism*); Prof. Kamalakar Mishra (*Yogic Experience in Tantra*); Prof. S.P. Singh (*Yogic Experience of the Vedic Seers*); Prof. N. Jayasanmugham (*Yogic Experience in the Upanishad*); Prof. T.N. Ganapathy (*Yogic Experience of the Tamil Siddhas*); Prof. Chandrashekhar Rath (*Yogic Experience in Mahima Dharma*) and Prof. Supriyo Bhattacharya (*Yogic Experience of the Bauls*).

It was a spontaneous feeling of the participants that the seminar was indeed a purposeful exercise, educative for all. Guidance and insights received from Prof. D.P. Chattopadhyaya and Prof. Kireet Joshi were deeply appreciated by the participants. They were also sincerely thankful to the local hosts, Prof. B.B. Dutta and Prof. Debjani Roy and their team of efficient volunteers, for their able and courteous management of the programme.

MANOJ DAS
Volume Editor
Varieties of Yogic Experience
Seminar Director
Pondicherry

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Nature and Culture: Discussion Meeting, National Institute of Advanced Studies, Bangalore, 5–6 May 2005

The two words that express the theme of this Discussion Meeting have many different connotations and raise a large number of fascinating questions. Nature can be the physical environment that a human culture inhabits: the rivers and mountains and valleys and forests and deserts and islands that characterize a whole land and seascape. Nature can also be the whole physical universe—in all its immensity (relative to the small part of it which we inhabit): not only the earth but the planets and the stars and other heavenly bodies. But nature cannot exclude man and all other life that are also parts of the same universe. So nature can also refer to the intrinsic character of individual human beings or of any collective of which they are members.

Culture must be seen as both a process and a product. Sociologists and anthropologists have studied culture extensively and constructed several theoretical frameworks for analysing it as a human phenomenon. Culture is influenced by the physical and experiential environment in which it lives—geography, climate, history; and in turn influences the view of nature held by the human collective that shares that culture. That collective is defined in part by geographical boundaries, religion and language, but often goes well beyond any of them. And culture expresses itself in art, literature, language, philosophy, law, science and technology.

In Indic thought nature may be *prakṛti*. *Sāṁkhya* philosophers expounded a dualism in which *prakṛti* was distinguished from *puruṣa* (spirit, man). (So perhaps the theme of the Meeting could well have been titled *Prakṛti* and *Puruṣa*.) But *human* nature was also expressed in *sva-bhāva*, often considered a major determinant of individual and collective history.

But in whatever senses the words are used, and whatever aspects of the subject we consider, there can be no doubt that nature and culture strongly interact with each other. It is these interactions that this Discussion meeting explored. In particular, the following issues were sought to be addressed.

- To what extent are Indic cultures influenced by the environment —in different parts of the country, and in India as a whole? Is there a common thread connecting all of them that could constitute an *Indic* culture? How have similar environmental influences operated on cultures in other parts of the world?
- To what extent do Indic views of nature influence our culture, and are influenced by it?—in cosmology, astronomy, mathematics, technology, the sciences in general? What are the connections between sacred art (temples, sculptures, painting etc.) and technology (building materials, construction engineering, metallurgy, dyes)? How are Indic theories of causality —*sāṁkhya*, *nyāya*, Buddhist, Jain and other systems of philosophy—related to other aspects of Indic culture? What role does the ancient idea of *ṛta* play in our view of the world? How have these views evolved over time, in particular as orthodox and protestant philosophies engaged in debate with each other? How do these views relate (if they do at all) to modern ideas in science and philosophy? Are they still relevant—to India, to the rest of the world?—and, whatever the answer, how and why?
- Human beings have always had an ambiguous relationship with nature. On the one hand, the forces of nature may be dreaded,

loved or adored. On the other hand, to ensure human survival, the same forces may also have to be analysed, understood and coped with if not tamed or mastered. This dual relationship is ancient: Indians have traditionally worshipped nature, sought its benefits and extolled the virtues of living in harmony with it. But they have also cleared forests, built lakes and dams, conveyed water over long distances for agriculture or for civic comfort, dug out minerals and diamonds, and cast metal or experimented with chemicals for enhancing the joy of living. What are the interactions between these views of nature? Are Indians revolted by Baconian dominationism over nature, or do they practise a softer form of it?

- Is (or was) there anything unique about Indic views of nature, and if so how do they relate to Indic culture? How closely can we trace such connections, assuming they exist? How are they different from views in other major civilizations of the world? Was (for example) the notion of beauty philosophically secondary in Indic thought (unlike in classical Greece), just as the notion of joy or bliss has been an Indic philosophical primary? Similarly, why did Indic culture award primacy to linguistics, in contrast to other major civilizations? Why did Indic mathematics place the concept of number in the forefront, rather than logic?

These are only some of the issues that arise in any consideration of the connections and interactions between nature and culture in Indic civilization. There are undoubtedly many others that are interesting and important, and the Discussion Meeting tried to identify and explore as many of them as possible, within the available material and human resources.

ABSTRACTS AND RESUME

Presentations on Thursday, 5 May 2005

SESSION 1: CHAIRPERSON: B.V. SREEKANTAN
11.10 A.M. – 12.30 NOON

Culture and Evolution

Vidyanand Nanjundaiah
Professor, Molecular Reproduction and Developmental Genetics, Indian Institute of Science, Bangalore

The word 'culture' is associated with human behaviour, often with human social behaviour. It is commonly accepted that behaviour is influenced by two factors. A great deal of behaviour is 'handed down', that is to say, learnt in the course of growing up; also, behaviour can be fashioned de novo during the lifetime of an individual. To put it roughly, we are born into a culture and we also acquire cultures. Whichever the route adopted, biological inheritance ("nature") plays an important role in the development of behaviour, as do environmental influences ("nurture"). However, one tends to think of cultural traits as being more acquired than inherited. Therefore, one thinks that culture evolves by a Lamarckian pathway rather than via a Darwinian pathway. This presentation made a case for the contrary assertion, namely that the biological underpinning of culture is not a trivial one. It is meaningful to talk about the evolution of culture in much the same way that one can talk about the evolution of any physical or mental trait, that is, as product, in part, of natural selection.

Nature and Culture: A Non-polarised Approach

Amita Chatterjee
Professor of Philosophy, Jadavpur University, Kolkata

The nature-culture divide is one of the most deeply entrenched divides in western thought, which can be traced back to the

Aristotelian distinction between 'nature' and 'techne'. These were also considered two powerful categories of the early enlightenment period, associated with concomitant binaries like objective and subjective, scientific and religious, externalised and internalised, body and mind, resources and tools, environment and construction, eco-fact and artefact, etc. Since Indian tradition was remarkably free of such sharp dichotomies, it was argued in this presentation that nature and culture never appeared as polar opposites in our thought. Relying on different philosophical sources, it was pointed out that just as nature was viewed through the cultural lens of our ancestors, similarly natural metaphors have very often been created and used in their understanding of the world.

SESSION 2: CHAIRPERSON: C.V. VISHVESHWARA
2.00 P.M. – 3.20 P.M.

Nature and Culture: A Critique of Occidental Scientific Culture

Partha Ghose

Former Professor of S.N. Bose Basic Sciences, Salt Lake City, Kolkata

The talk dealt with Baconian dominationism and the Judeo-Christian cosmology contrasted with the Indic view—Classical European science led to a fragmented world and disenchantment with Nature. The need for defragmentation or re-unification and re-enchantment with Nature, a holistic approach, is being engendered by the evolution of theoretical physics, complexity theory and the need to control environmental pollution for sustainable development.

Ancient Astronomy in India and China

Nataraja Sarma

Formerly-Scientist of BARC, Mumbai

It is not generally accepted that India and China had a tradition of astronomy contemporaneous with Mesopotamia. The parallel development of astronomy in India and China in a few areas was briefly sketched to indicate that there was an active exchange of information between the two nations. The controversial subject of the origin of the *nakshatras* was described.

SESSION 3: CHAIRPERSON: PARTHA GHOSE
3.40 P.M. – 5.00 P.M.

Nature, Culture and Science: Triangle or Tangle?

B.V. Sreekantan

Hon. Professor, National Institute of Advanced Studies, Bangalore

Nature, Culture and Science are all products of sequential and parallel evolutions following the grandest of them all—the cosmic evolution. Ideally, from the point of view of man who is also a evolution, nature, culture and science should continue to evolve separately, each on its own, with some loose beneficial couplings resulting in an ever-expanding triangular manifold with humanity at the centroid. However in recent times, especially in the 20th century and after, the interaction and the interference among the three have become so strong and tangled that deleterious effects are surfacing in all of them. Human nature and involvement cannot escape the responsibility for this sordid happening. The presentation raised the questions: Are there any rectifying mechanisms at all? Or are we helpless?

Cosmos and Culture

C.V. Vishveshwara

Vice-Chairman, BASE and Honorary Director, Jawaharlal Nehru Planetarium, Bangalore

For ages, the universe has been a source of knowledge and wonder. In addition, it has had a profound influence on culture in its broadest sense through philosophy, religion, art, and literature as well as, unfortunately, through misconceptions and superstitions. In the ancient past, before the true nature of celestial phenomena had been explained by the laws of nature, the universe was a stage on which myths and folklore enacted their eternal drama night after night, year after year. Stars and constellations were associated with gods, demons, and mythological characters. This association played a dual role. It facilitated the identification of these constellations, while at the same time it served the purpose of preserving the cultural heritage. While the sun, the moon, and the planets were venerated as gods, their motion and other natural phenomena associated with them engendered irrational beliefs. For instance, astrology, the 'step-daughter' of astronomy, has had and continues to have a powerful hold on human activities. Likewise, in spite of our complete and accurate knowledge of the cause of eclipses, religious beliefs and rituals continue to prevail. On the other hand, the cosmos with its rich variety has been a fountainhead of inspiration for poets and artists alike, as exemplified, for instance, by the writings of Shakespeare and the paintings of Van Gogh and others. The large-scale structure of the universe has always stimulated philosophy at the highest level. Starting from the Platonic ideals of symmetry, the geocentric cosmos of Aristotle and Ptolemy, with its crystal spheres carrying the planets and creating divine music, held sway for nearly two millennia. The total acceptance of this cosmic order was reflected in all spheres of intellectual and artistic activities, as, for instance, in the poetry of Dante Alighieri, The Copernican revolution that followed was an unimaginable leap from appearance to reality. The devastating effect of this transition in the worldview, with man being dethroned from his central position in the universe and the gods themselves banished to infinite distances in space, was demonstrated by the tragic saga of Galileo. The final elucidation of the 'clockwork' cosmos consisting of the solar system and the distant stars was achieved by Newton. In a short span of the past century or so, our knowledge of the universe has expanded enormously. This has opened up a new chapter in the realization of our own place and role in our cosmic habitat. On the theoretical side, the novel ideas of space and time put forward by Einstein have dramatically changed our very thought process. All these modern developments are bound to have their repercussions on our own global culture.

The discussion of the above ideas was illustrated with photographs of celestial objects, and quotations and paintings inspired by them.

Presentations on Friday, 6 May 2005

SESSION 1: CHAIRPERSON: FRITS STAAL
10.00 A.M. – 1.00 P.M.

Bridging Concepts between Nature and Culture

D.P. Chattopadhyaya
Chairman, Centre for Studies in Civilizations
New Delhi and Kolkata

Ecology and Indian Literary Culture

Indra Nath Choudhuri
Academic Director, Professor and Head, Indira Gandhi National Centre for the Arts (IGNCA), New Delhi

In this fast changing world with tremendous technological advancement, one feels at a loss to find that, even with an environmental crisis taking such serious proportions, people are not much concerned about it. The situation today reminds one sometimes of the last few hours of the *Titanic*, when people were playing music while the ship was sinking.

The environmental crisis cannot be solved by good engineering or better engineering, cannot be solved by economic planning, cannot even be solved by cosmetic changes in our conception of development and change. It also cannot be solved by a rationalist environmental ethics based on scientific knowledge. It requires a very radical transformation in our consciousness. This means not discovering a completely new state of consciousness, but returning to the state of consciousness which traditional humanity always had. It means to rediscover the traditional way of looking at the world of nature as sacred presence.

Whatever one sees on this earth is the manifestation of that Supreme One, and this leads to the famous Upanishadic statement that there is only one and that is all pervading. This creates the Indian world-view that the whole earth is one family, *vasudhaiva kutumbakam*. In this holistic view all life is one and inner and external realities are mutually dependent. Hence a tree is not a utilitarian object but a member of the family. This does not allow any upsetting of the balance of the earth and destruction of the fabric of nature. In nature nothing is created, nothing is destroyed but everything is transformed. From the fallen leaves of the tree new plants emerge. This is also known as conservation of matter. Biotic community is one structure with two parts. One part consists of natural environment, soil, air, water, fire and ether, and the other part consists of animal species and human beings. There exists an intricate and extensive network of links between these two parts.

The holistic perspective of the universe is described beautifully in the play *Shakuntala* by Kalidasa when the foster father seeks permission from the trees, flora and fauna of the Ashram to allow *Shakuntala* to go to her husband's house.

The Vedic vision of geopiety considers man to be a guardian of natural resources. He replenishes the bounties of the earth rather than plundering them. Conservation thus means a state of harmony (*rim*) with land, forest, water and natural environment.

Despite the traditional holistic view articulated through sacred texts and secular Indian literature as a constant reminder of the need to sustain and foster the ecological balances of nature, we stand today at the threshold of disaster in a manner never before faced by man. The present day social environment and its impact on our living are making us lose our association with nature resulting in a new slant in our creativity.

For some it is a life of despair, and they are condemned to live in a desolate environment. There are other writers who are trying to catch up again with the golden age where a tree was not only a botanical object but also a mythical incantation, and some others are in a quandary. They do not know where to plant their little roses. Now they feel that man as a social animal or man as a cog in a machine has lost connection with nature.

Our tragedy is that we are a poor country and have accepted the western model of development which provides us the means to destroy our resources rapidly and tragically. Our underdevelopment furnishes us the reasons, the excuses, and the compulsion to do so, and in the process we face unmitigated disaster from both directions: poverty from below and development from above, and therefore our urgency is greater

1) to change the direction of our development,
2) to think of alternative means of development,
3) to accept the concept 'Technology with a human face', and
4) to link development with culture and tradition.

There are two ways for transforming and maintaining a harmonious relationship with our physical and social environment:

1) to think or act with ecofeminism that nature is at the centre of our experience and that the destruction of nature is linked with the oppression of women;
2) to expose the western mode of development with totalizing tendencies and go also for an alternative model of development which will allow for the rhythm and movements of human life to be in accordance with nature.

Nature and Culture in Early Dravidian Poetry

S. Settar
Dr S. Radhakrishnan Visiting Professor, National Institute of Advanced Studies, Bangalore

Tolkappiyar, the earliest of the Tamil grammarians, goes into the question of how a community of people acquire a distinctive character and also a name that mirrors this character; he arrives at the conclusion that these are primarily dictated by the natural elements which characterize the landscape chosen for living and the crafts pursued. He develops his thesis by identifying five types of landscapes in which the early Tamils lived and shows how their life was shaped by each of these. These landscapes are called in Tamil *tinai.* Each *tinai* is represented by a flower, a unique gift of nature; the flower, in turn, symbolizes the dominant psyche of the community which occupies that *tinai.*

His presentation considered the nature of this thesis and described how it moulded the culture of the early Dravidians.

Poetic Culture of India (with Special Reference to Kālidāsa)

R. Ganesh
Dean, Department of Values at the International Academy for Creative Teaching

Poetry according to Indian aesthetics developed by Bharata, Ānandavardhana, *Kuṅtaka*, Abhinavagupta and others is essentially an experience of beauty, i.e., the substance (*swarūpa*) suggested through a metalinguistic structure (*rūpa*) and any experience is nothing but the union of subject and object. However, any process of understanding invariably tries to bifurcate structure (*vakrókti*) and substance (*rasa*) in the context of art, for experience is always indescribable. To overcome this difficulty, Ānandavardhana, inspired by the philosophy of *śabdādvaita* following the methodology of *vivartavāda,* propounded the theory of *dhvani,* wherein similar to *adhyārópāpavāda* of Śankara and Gaudapāda, the indescribable is sucessfully suggested beyond any doubt.

All structures can be reduced to *nāma* and *rūpā* where the former is linguistic and the latter is materialistic. They mainly exist in the matrix of time and space respectively. As space and time are interdependent the structures finding their existences in them are also interdependent. Hence by understanding any one, the philosophy of the other will be eventually realized. Working on language is more nature-friendly (eco-friendly) and economical, for it is more spiritual. Perhaps this is the reason why Indic culture relied more on linguistics in contrast with other major civilizations.

Language at its best and in its finest possibilities and potentialities is seen in poetry alone, and perhaps classical Sanskrit is the only natural language where this phenomenon is realized at its sublime height. Hence any metalinguistic pursuit easily transcends nature and reveals itself as culture, while that of the materialistic confronts with nature and establishes itself as civilization. Culture is always concerned with the impersonalization (*sādhāraṇī-karana*) of experience while civilization struggles to personalize the same. Therefore bliss (*ānaṅda*) and the very nature of existence and awareness (*sat* and *cit*) become a prime concern to culture than mere beauty (*cārutva*), which is always held high by the civilization. However, Indic cultures do study with all seriousness the philosophy and technique of beauty as form and employ it to subserve beauty/bliss, the content.

All these home truths are artistically revealed in classical Sanskrit poetry and *Kālidāsa* stands supreme as an unrivaled representative of this poetic culture. In him all the values of Indic culture are enshrined. Kālidāsa's seven works, perhaps concluding with the epic *Raghuvaṁśam*, show the quest after perfection. It is needless to say this quest includes nature and culture too.

The speaker sought to drive home this through a few observations in Indian aesthetics and point to the poetry of Kalidasa.

SESSION 2: CHAIRPERSON INDRA NATH CHOUDHURI
2.00 P.M. – 4.20 P.M.

Nature and Culture: Some Philosophical Reflections

R.C. Pradhan

Head, Department of Philosophy, University of Hyderabad, Hyderabad

This paper highlighted the continuity between nature and culture. Nature and culture have been perceived as antithetical to each other. But this seems to be based on a misunderstanding of the underlying unity of nature and culture. If nature provides the ground on which culture stands, culture no less contributes to the understanding of nature itself. Culture which includes man's mental, moral and spiritual development in all aspects is a comprehensive account of man's multifarious activities at various levels. It stands for the meanings and values which mankind has pursued throughout recorded history. If nature would not have been the matrix of human culture and civilization, the cultural values and meanings would not have been what they are. Both nature and culture are seen in Indic thinking as the manifestations of the Divine Spirit. From this point of view, both nature and culture are the different stages of development of the Divine Spirit.

The Blind Dancer and the Stunned Onlooker: Nature, Consciousness and Two Ways of Knowing in *Sāṁkhya*-Yoga

Sangeetha Menon
Fellow, National Institute of Advanced Studies, Bangalore

Sāṁkhya is one of the oldest schools of Indian philosophy. It devises a *modern* approach to understand the complexity of self-identity using materialistic principles. Like in a standard scientific approach *Sāṁkhya* philosophy devises a parsimony which admits two basic premises. *Prakṛti* evolves, *puruṣa* looks.

In concurrence with a naturalistic trend *prakṛti* is conceived as the prime matter which produces and evolves. Even mind and rational processes have an evolutionary nature being born of *prakṛti*. But then, nature has only one intention, though partial, —to evolve and evolve and keep the *puruṣa* engaged. Being blind and not able to see the evolutes *prakṛti* has no subjective grievance or pleasure in what she does. Nature has no power to reflect upon. *Puruṣa* is the non-participative onlooker who 'enjoys' (*bhoga*) the dance of *prakṛti*. Interestingly *puruṣa* also has the possibility for reflection and final liberation (*apavarga*). *Puruṣa* not only receives but also reflects. The liberative knowledge is to understand that the unmanifest form of *prakṛti* (*vyakta*), manifest form of *prakṛti* (*avyakta*) and the knower (*puruṣaljna*) as distinct.

Two ideas in classical *Sāṁkhya*, and the spill over of Yoga in later *Sāṁkhya*, are quite striking. One idea is that intelligence, though facilitated by *prakṛti* with the necessary mechanisms, is expressed only by *puruṣa*, the conscious principle. The other idea is that rational processes and reflective processes do not have the same residence. Though causally, *prakṛti* is responsible for the evolution and manifestation of the complex system of intelligence the power to reflect and have the ensuing knowledge of the distinct existence of the different modes of *prakṛti* and that which reflects and knows resides in *puruṣa*. This would be a departure from the standard ways of understanding intelligence in the ways of Darwin and Dennett, distinguishing the function and locus of intelligence. The mechanism for knowing is a product of *prakṛti*, but the expression of intelligence and reflection is possible only for *puruṣa*.

The presence of *puruṣa* is needed for *prakṛti* to manifest and awake from the hibernating slumber of the non-mutative state. The manifestation of *prakṛti* is needed for *puruṣa* to both see what is happening and also to keep away. The psychological dynamics is of witnessing and detaching. *Sāṁkhya* represents a clean distinction between mechanisms and functions of materiality and consciousness. This clean distinction becomes more dynamic in Yoga which gives emphasis for the powers of consciousness using complex psychological therapeutics.

The oldest Indian thought of distinguishing materiality and intelligence has not only influenced almost all schools of Indian philosophy but also medicine, art and cosmology. A duality which has both a participative and a non-participative dimension is responsible for the active engagement of the Indian mind with both *parā* and *aparā vidyā*—that which is here and that which is transcendental.

Culture Views Nature: Bacon and *Sāṁkhya* Compared

Roddam Narasimha
Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore

Why compare Bacon and *Sāṁkhya*? Because Francis Bacon (1561-1626) is the patron-saint of modern science, and because the enduring *sāṁkhya* system is often considered, in India and elsewhere (e.g. by J.B.S. Haldane), the most 'rational' and 'scientific' among the major Indic philosophical systems. But the similarities in Baconian and *Saṁkhya* philosophies are as striking as the differences. For the former nature is to be obeyed *and* commanded, and eventually enslaved. For the latter, nature is like a well-born lady, minimally revealing. The consequences of these and other similar views of nature for the development of science and technology in the respective cultures are briefly traced, and the question is raised whether the more immediate natural surroundings that a culture inhabits do not affect its view of nature, and hence also the way that those surroundings are treated.

PUBLC LECTURE
6.30 P.M. – 8.00 P.M.

What Euclid is to Europe, Panini is to India — Or Are They?

Frits Staal
Emeritus Professor of Philosophy of South and Southeast Asian Studies, University of California, Berkeley

Prof. Staal has written some 15 books and 150 articles on Indian logic and linguistics, Vedic ritual, mantras, mysticism and other topics. "What Euclid is to Europe, Paṇini is to India" was the thesis of his Inaugural Lecture as Professor of Philosophy at the University of Amsterdam in 1963. He revisited the subject in this lecture. In Europe, Plato required geometry from all his students. Newton's *Principia* and Spinoza's *Ethics* copied Euclid. All over the world the axiomatic method is a triumph of modern logic and mathematics. In India, grammar is the Science of the Sciences and *Pāṇini's* grammar starts with the *Sivasutras* from which it may be logically derived. Prof. Staal noted that Chomsky and Halle's major work on phonology ends with the same rule as *Pāṇini's* grammar.

RODDAM NARASIMHA
Chairman, Engineering and Mechanics
Jawaharlal Nehru Centre for Advanced Scientific Research
Bangalore

SANGEETHA MENON
National Institute of Advanced Studies
Bangalore

Sandhān, Vol. V, No. 1, January–June 2005

NEWS & NOTES

A Brief Report on the Activities of Centre for Studies in Civilizations

PHISPC SEMINARS

The following seminars were organized by PHISPC during January–June 2005.

1. January 21–23, 2005. *Seminar on History of Agriculture in India*, New Delhi (Director, Professor V.C. Srivastava).
2. January 28–30, 2005. *Seminar on Tradition of Astronomy and Mathematics in India*, Tirupati (Director, Dr. B.V. Subbarayappa).
3. February 7–9, 2005. *Seminar on Vaishnavism*, Imphal (Director, Professor S. Shyamkishore Singh).
4. March 7–8, 2005. *Seminar on Constitutional History of India: Development of Indian Polity. Governance and Constitutional Culture*, New Delhi, (Director, Dr. Subhash C. Kashyap).
5. March 15–17, 2005. *Seminar on Contribution of the Malayalam Language towards History of Indian Science, Philosophy and Culture*, Kalady (Director, Professor M.G.S. Narayanan).
6. March 21–23, 2005. *Seminar on Tribal Religion*, Imphal (Director, Professor S. Shyamkishore Singh).
7. April 5–7, 2005. *Seminar on Role of Christianity in the North-East*. Guwahati (Director, Professor A.V. Afonso).

8. April 25–26, 2005. *Seminar on Buddhism: With Reference to Modern Context,* Tawang (A.P.) (Director, Professor G.N. Samten).
9. April 28–30, 2005. *Seminar on Varieties of Yogic Experiences,* Shillong (Director, Professor Manoj Das).
10. May 5–6, 2005. *Seminar on Nature and Culture.* Bangalore (Director, Professor Roddam Narasimha).

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PHISPC and CONSSAVY (EXTENDED PHISPC PROJECT) Publications

Under the PHISPC series, publication of major volumes and monographs has been undertaken. The following are the Volumes in this series.

CONCEPTUAL VOLUMES

*Part 1 *Science, Philosophy and Culture: Multi-disciplinary Explorations*, D.P. Chattopadhyaya & Ravinder Kumar (ed.)
*Part 2 *Science, Philosophy and Culture: Multi-disciplinary Explorations*, D.P. Chattopadhyaya & Ravinder Kumar (ed.)

VOLUME I THE DAWN AND DEVELOPMENT OF INDIAN CIVILIZATION

*Part 1 *The Dawn of Indian Civilization (up to c. 600 BC)*, G.C. Pande (ed.)
*Part 2 *Life, Thought and Culture in India (from c. 600 BC to c. AD 300)*, G.C. Pande (ed.)
†Part 3 *India's Interaction with Southeast Asia*, G.C. Pande (ed.)
†Part 4 *A Golden Chain of Civilizations: Indic, Iranic, Semitic and Hellenic* up to c. 600 BC, G.C. Pande (ed.)
†Part 5 *A Golden Chain of Civilizations: Indic, Iranic, Semitic and Hellenic* up to from c. 600 BC to AD 600 c. 600 AD, G.C. Pande (ed.)
†Part 6 *Puranas, History and Itihasa*, Vidya Niwas Misra (ed.)

**Already Published*
†In the Process of Publication
‡Under Plan

VOLUME II LIFE, THOUGHT AND CULTURE IN INDIA (AD 300–1100)

- *Part 1 *Life, Thought and Culture in India (AD 300–1000)*, K. Satchidananda Murty (ed.)
- *Part 2 *Advaita Vedānta*, R. Balasubramanian (ed.)
- *Part 3 *Theistic Vedānta*, R. Balasubramanian (ed.)
- *Part 4 *Origin and Development of the Vaiśeṣika System*, Anantalal Thakur
- †Part 5 *A Social History of India in the First Millennium AD*, B.D. Chattopadhyaya (ed.)
- †Part 6 *Pūrvamimāṁsā from an Interdisciplinary Point of View*, K.T. Pandurangi (ed.)

VOLUME III DEVELOPMENT OF PHILOSOPHY, SCIENCE AND TECHNOLOGY IN INDIA AND NEIGHBOURING CIVILIZATIONS

- *Part 1 *History of Indian Science, Technology and Culture (AD 1000–1800)*, A. Rahman (ed.)
- *Part 2 *India's Interaction with China, Central and West Asia*, A. Rahman (ed.)
- *Part 3 *Development of Nyāya Philosophy and its Social Context*, Sibajiban Bhattacharyya (ed.)
- †Parts 4 & 5 *Philosophical Concepts Relevant to Science in Indian Tradition*, Pranab Kumar Sen (ed.)
- *Part 6 *India and China: Twenty Centuries of Civilizational Interaction and Vibrations*, Tan Chung & Geng Yinzeng
- †Part 7 *The Trading World of the Indian Ocean, AD 1500-1800*, Om Prakash (ed.)

VOLUME IV FUNDAMENTAL INDIAN IDEAS OF PHYSICS, CHEMISTRY, LIFE SCIENCES AND MEDICINE

- *Part 1 *Chemistry and Chemical Techniques in India*, B.V. Subbarayappa (ed.)

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- *Part 2 *Medicine and Life Sciences in India*, B.V. Subbarayappa (ed.)
- *Part 3 *Indian Perspectives on the Physical World*, B.V. Subbarayappa
- †Part 4 *History of Indian Astronomy and Mathematics*, B.V. Subbarayappa

VOLUME V AGRICULTURE IN INDIA

- ‡Parts 1 & 2 *A History of Agriculture in India*, Lallanji Gopal & V.C. Srivastava (ed.)

VOLUME VI CULTURE, LANGUAGE, LITERATURE AND ARTS

- †Part 1 *Aesthetic Theories and Forms in Indian Tradition*, S.S. Barlingay, D.P. Chattopadhyaya and Kapila Vatsyayan (ed.)
- †Part 2 *Architecture in India*, M.A. Dhaky (ed.)
- *Part 3 *Indian Art: Forms, Concerns and Development in Historical Perspective*, B.N. Goswamy (ed.)
- †Part 4 *Language, Grammar and Linguistics in Indian Tradition*, V.N. Jha (ed.)
- ‡Parts 5-10 *PHISPC in Regional Languages and Literatures*

VOLUME VII THE RISE OF NEW POLITY AND LIFE IN VILLAGES AND TOWNS

- *Part 1 *The State and Society in Medieval India*, J.S. Grewal (ed.)
- †Part 2 *Religious Movements and Institutions in Medieval India*, J.S. Grewal (ed.)
- †Parts 3, 4 & 5 *Religious Systems of India*, S.R. Saha, N.S.S. Raman, M. Rafique and others (ed.)

VOLUME VIII ECONOMIC HISTORY OF INDIA

- †Part 1 *Economic History of India from Thirteenth to Seventeenth Century*, Irfan Habib (ed.)

**Already Published*
†In the Process of Publication
‡Under Plan

†Part 2 *Economic History of India from Eighteenth to Twentieth Century*, B.B. Chaudhuri
*Part 3 *Economic History of India from Eighteenth to Twentieth Century*, B.B. Chaudhuri (ed.)

VOLUME IX COLONIAL PERIOD

*Part 1 *Medicine in India: Modern Period*, O.P. Jaggi
†Part 2 *Women in India: Ancient and Medieval Period*, Bhuvan Chandel (ed.)
*Part 3 *Women of India: Colonial and Post-Colonial Periods*, Bharati Ray (ed.)

VOLUME X TOWARDS INDEPENDENCE

*Part 1 *Development of Indian Philosophy from Eighteenth Century Onwards*, Daya Krishna
†Part 2 *Colonial Development, Education and Social Awareness up to 2000*, S. Gopal, Ravinder Kumar & S. Bhattacharya (ed.)
*Part 3 *Historical Perspectives of Warfare in India: Some Morale and Material Determinants*, S.N. Prasad (ed.)
†Part 4 *Cultural Foundations of Mathematics: The Nature of Mathematical Proof and the Transmission of the Infinitesimal Calculus from India to Europe in the 16th c. CE*, C.K. Raju
†Part 5 *Development of Modern Indian Thought and the Social Sciences*, S. Bhattacharya (ed.)
†Part 6 *International Relations of India with South Asian & Some Neighbouring Countries*, Jayant Kumar Ray (ed.)
†Part 7 *Political Ideas in Modern India: Thematic Explorations*, V.R. Mehta & Thomas Pantham (ed.)

**Already Published*
†*In the Process of Publication*
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Contributors

1. A.V. AFONSO, Professor of Philosophy, Fellow, Indian Institute of Advanced Study, Shimla.
2. APARNA BANERJEE, Department of Philosophy, Maulana Azad College, Kolkata.
3. ASHIM KUMAR CHAKRAVARTY, Professor, Centre for Life Sciences, University of North Bengal, Siliguri.
4. MANOJ DAS, Sri Aurobindo International Centre of Education, Pondicherry.
5. REENA GANGULY, Visva Bharati University, Santiniketan.
6. SATYA P. GAUTAM, Professor & Chairperson, Centre for Philosophy, School of Social Sciences, Jawaharlal Nehru University, New Delhi.
7. MERCY HELEN, Director, Planning & Research, ICPR, New Delhi.
8. REKHA JHANJI, Professor of Philosophy, Panjab University, Chandigarh.
9. A. KANTHAMANI, Professor and Head, Department of Philosophy, Calicut University, Kerala.
10. J.N. MOHANTY, Professor, Philosophy Department, College of Arts & Science, Temple University, USA.
11. RODDAM NARASIMHA, FRS, Chairman, Engineering Mechanics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore.
12. R.C. PRADHAN, Professor of Philosophy, Central University, Hyderabad.
13. N.S. RANGASWAMY, Editorial Fellow, PHISPC-CONSSAVY Project, Delhi.

14. DHRUV RAINA, Professor, School of Social Sciences, Jawaharlal Nehru University, New Delhi.
15. S. BALACHANDRA RAO, Hon. Director, Gandhi Centre of Science and Human Values, Bangalore.
16. S. SHYAMKISHORE SINGH, Professor, Manipur University, Imphal.
17. VIKRAM SINGH SIROLA, Assistant Professor, Deptt. of H&SS, Indian Institute of Technology, Mumbai.
18. V.C. SRIVASTAVA, Editorial Fellow, PHISPC, Allahabad.
19. SANGEETHA MENON, National Institute of Advanced Studies, Bangalore.

Notes for Contributors

Submission of articles and related correspondence should be addressed to:

The Editor
Sandhān
Centre for Studies in Civilizations
Darshan Bhawan
36 Tughlakabad Institutional Area
New Delhi — 110 062.

Tel. (011) 2605 6657, 2605 7541
Tele-fax: (011) 2605 8735
E-mail: csc@del2.vsnl.net.in

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